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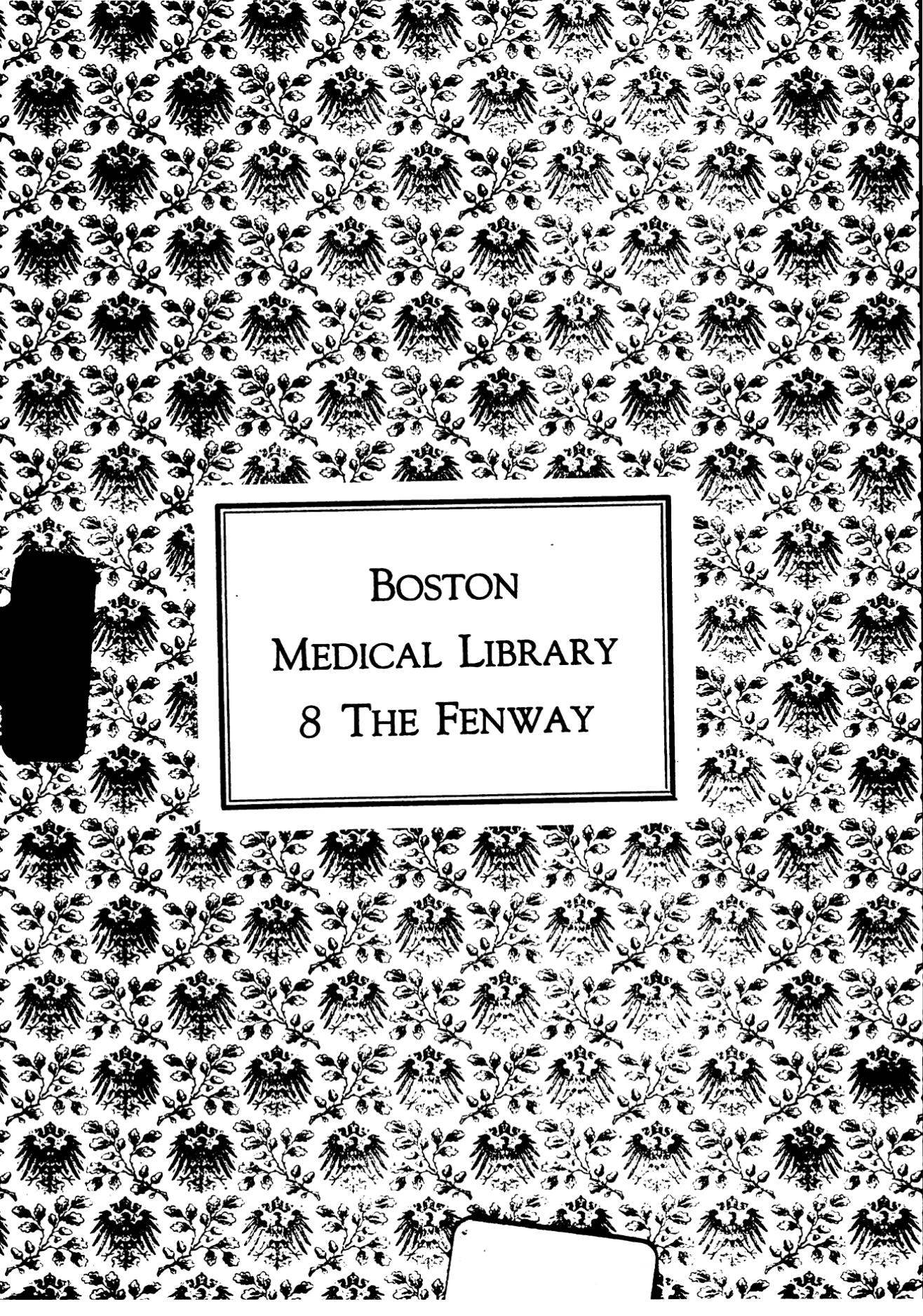
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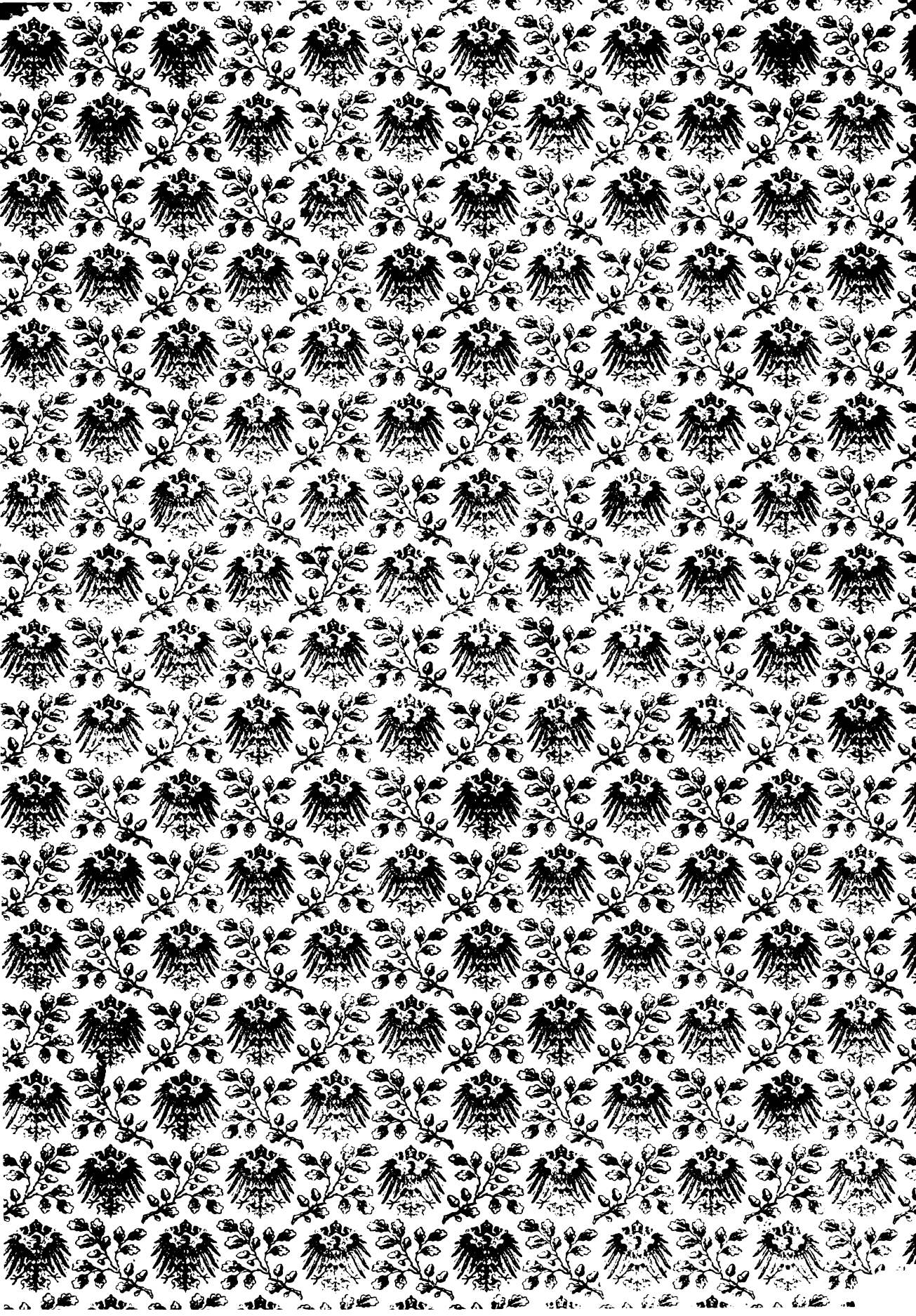
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THE

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INCORPORATING

MEDICINE AND THE MEDICAL AGE

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EDITED BY

H. A. HARE, M.D.,

Professor of Therapeutics in the Jefferson Medical College,

GENERAL THERAPEUTICS;

AND

EDWARD MARTIN, M.D.,

Professor of Clinical Surgery in the University of Pennsylvania,

SURGICAL AND GENITO-URINARY THERAPEUTICS.

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ORIGINAL COMMUNICATIONS.

THE TREATMENT OF ECLAMPSIA IN THE PATIENT'S HOME.¹

BY EDWARD P. DAVIS, M.D.,

Professor of Obstetrics in the Jefferson Medical College of Philadelphia.

No discussion of the treatment of disease can be rational or complete which does not consider the pathology of the affection.

In the light of our present knowledge, eclampsia results from a complex toxemia whose materials are formed in the liver, cellular tissue, and kidneys of the mother, in the fetus, and in the placenta. The blood of the mother is burdened with poisons whose circulation through the nervous system produces convulsions. The removal of the fetus and its appendages from the body of the mother favors cessation of the convulsions in many patients; in other cases it has no influence whatever upon the course of the disease. Should the child survive its birth it may perish from the same toxemia which produced the maternal convulsions.

When the mother recovers from eclampsia she does so by virtue of profuse elimination. In favorable cases convulsions are brought to a close by profuse elimination, which relaxes the spasm of the blood-vessels and restores the healthful condition of the blood. This may or may not be accompanied by the expulsion of the fetus. When patients die from eclampsia they die from exhaustion of the nerve centers, with high temperature and paralysis of the vasomotor, cardiac, and respiratory centers.

The treatment of eclampsia in private houses must be conducted under considerable limitations. Methods of treatment by operation which require thorough antiseptic

technique are rarely possible. Very frequently methods of treatment requiring especially skilful nursing cannot be carried out. In many cases the physician must limit himself to those things which he can do personally, or which can be entrusted to untrained persons of average intelligence. It is obvious that, when possible, cases of eclampsia should be sent to hospitals. Their management is so complex and difficult that frequently the resources of a good hospital are considerably taxed in their care.

When a physician is summoned to a case of eclampsia in a private house his first duty is to rescue the patient from the danger of injuring herself through biting the tongue and lips or falling from the bed upon the floor. This may be done by placing a folded towel between the teeth and by instructing some one how to keep the patient upon the bed. To mitigate the severity of the convulsions a small quantity of chloroform may be used.

A thorough examination of the patient should next be made, and although the case may seem terrifying and demanding instant treatment, yet plenty of time should be taken to thoroughly examine the case. The condition of the pupils, the pulse tension, the presence or absence of fetal heart sounds, the character and frequency of uterine contractions, and the condition of the lungs of the mother, should all be ascertained. The presence or absence of a large quantity of gas in the intestine should also be observed, and vaginal examination

¹Read before the Southern Branch of the County Medical Society, Oct. 25, 1907.

should then be made; for this it is well to give the patient a small quantity of chloroform, so that vaginal manipulation may not excite convulsions. Vaginal examination should determine the degree of dilatation and effacement of the cervix, the softness of the cervix, the condition of the membranes, the presentation and position, and the proportionate size of the presenting part and the pelvis. In other words, the vaginal examination should ascertain the feasibility and propriety of delivering the patient at once. If the cervix is found effaced or greatly shortened, the tissues soft and yielding, the dilatation two-thirds complete, the presenting part well engaged, the uterus acting in its endeavor to expel the child, the patient should be delivered as soon as possible. If, however, the cervix is but very little shortened, not much softened, the os not dilated, the presenting part not engaged, the patient having little or no uterine contraction, no efforts should be made to empty the uterus.

Should delivery be indicated, it is usually possible to complete dilatation of the cervix with the hand, under chloroform, apply the forceps, and deliver the patient. The placenta should be removed promptly, and the uterus thoroughly irrigated with salt solution and packed with sterile, or ten-per-cent iodoform, gauze. Extensive lacerations of the cervix and pelvic floor, if the patient is in fair condition, should be immediately closed.

If the conditions are not favorable for immediate delivery, the patient should be treated by the most prompt and vigorous elimination. If the pupils are small, the pulse tension very high, the pulse beat heavy, strong, and slow, the color of the face dusky, the patient more or less comatose, with stertorous breathing, the most prompt and efficient treatment consists in taking from the arm from four to eight ounces of blood, followed immediately by intravenous saline transfusion. The quantity of fluid introduced into the circulation should be governed by the condition of the heart. If the heart be vigorous, its muscular sound good and its beat strong, from one to two pints of fluid may be given. If

the heart action is feeble, the heart sounds poor, and the general condition of the patient that of relaxation, not more than one pint should be used. It must be remembered that a large quantity of fluid introduced suddenly into the circulation, where the heart muscle is weak, may assist in causing acute and even fatal dilatation.

The large intestine of the patient should next be very thoroughly flushed with hot salt solution. It is well to secure free egress for the fluid, at first washing away such fecal matter as will come, and then allowing one or two quarts to remain for absorption. The patient should preferably be placed upon the left side with the hips raised, the largest available rectal tube be inserted as high as possible, and from one to two gallons of fluid should be employed.

Copious lavage of the stomach with hot salt solution is exceedingly valuable, but is sometimes not available in private houses. It may be impossible to procure the simple apparatus needed for this treatment. When it can be done, however, the stomach should be washed until the fluid runs practically clear, and following this from five to ten grains of calomel and bicarbonate of soda should be placed in the stomach through the stomach-tube.

While the pack is of very considerable value in most cases, it must be given properly and with caution to avoid injury to the patient. If carelessly given the patient may become chilled or burned. The physician should not attempt it unless he has fairly competent assistance. If the wet pack cannot be given it will be of decided advantage to the patient if she be wrapped in a blanket, each leg being wrapped separately to permit treatment addressed to the intestines and vaginal examinations, hot-water bottles being placed about the legs and feet, and cloths wrung out of ice water should be placed upon the forehead.

When the pack can be given a rubber sheet or mackintosh should be placed upon the bed, and over this a large blanket wrung out of hot water. On this the patient is placed without clothing, wrapped in the hot blanket, and other hot blankets wrung out of hot water placed upon her,

the legs being separately wrapped. Over all is put a rubber sheet. Cold is applied to the head and face. The patient may safely remain in a hot pack from thirty to sixty minutes. When she ceases to sweat she should be thoroughly and gently rubbed with hot dry flannel and wrapped in dry blankets.

Distention of the bladder is very common in eclampsia and is of considerable importance. Such a patient should be catheterized every four to six hours and for several days after her recovery from convulsions. The urine should be examined and its quantity and character noted.

In spite of the treatment already described the patient's pulse tension may remain high; in such a case *veratrum viride* should be given hypodermically in 10 mm. doses hourly, not exceeding three doses. The effect of this drug is to relax pulse tension, to favor dilatation of the cervix and dilatation of the venous portion of the circulation. In moderate doses it is especially valuable.

The treatment thus outlined, if thoroughly done, will occupy several hours, and during this period convulsions may be controlled by the inhalation of chloroform, using as little as possible; care should be taken to keep the patient's mouth and throat quite free from mucus to prevent inspiration pneumonia; if possible the room should be well ventilated. At the end of several hours, if the patient is to deliver herself, the cervix will be dilated to some degree and the presenting part will have descended. In choosing the time for delivery, it is especially important that the physician delay until the cervix has been effaced and the tissues about the external os fully softened. If the patient is growing more quiet, the pulse tension less, if she is sweating freely and the cervix is softening and dilating, the physician should not interfere. Intestinal lavage may be repeated without much disturbance to the patient and with great advantage. If a hot pack has been used it may be repeated in two or three hours. If the patient has vomited freely, the gastric lavage may be repeated, and if there is evidence that the

patient has ejected the calomel a smaller dose may then be given.

The determination to interfere and end the labor should be made upon the following grounds: The cervix thoroughly softened, partly dilated, the presenting part well engaged and descending, and uterine contractions developing decidedly. This last is the crucial test, because uterine contractions excite eclamptic convulsions, and when labor has become active it must be terminated as soon as possible. In terminating labor the uterus must be thoroughly emptied at once, the placenta being removed and the uterus douched with sterile salt solution and packed with ten-per-cent iodoform gauze. If the patient is in fair condition lacerations in the cervix, pelvic floor, and vagina should be immediately closed. Remembering the tendency to profuse hemorrhage, the uterus should be thoroughly packed, the vagina as well.

If the indications for delivery are not present, the eliminative treatment already described should be kept up until labor declares itself. If the patient's strength shows signs of lessening she may be given by rectum an ounce of whisky and four ounces of salt solution every three or four hours. Digitalin may be given hypodermically to sustain the heart; strychnine and atropine, if pulmonary edema and heart failure are threatened.

After delivery the physician must remember that the patient is by no means safe from eclampsia. After the patient has reacted from labor there is no objection to giving morphine or codeine in sufficient doses to procure refreshing sleep. So soon as the patient can swallow she should be given peptonized milk diluted with barley water, and if the rectum will retain them, rectal injections of whisky and salt solution should be given. Strychnine may be given hypodermically as needed. Ergot should be omitted because of the enfeebled condition of the heart. The patient should be kept between warm blankets in a well-ventilated room, and absolutely quiet. Catheterization must not be forgotten, as after delivery in eclampsia the bladder often be-

comes extremely distended. The inhalation of oxygen during eclampsia and after delivery is of decided value when it can be continuously and skilfully administered.

We must remember that eclampsia, like most diseases, is self-limited. We have seen a woman have most violent eclampsia and recover without coming into labor and without losing the life of her child. She was spontaneously delivered some time after her recovery from eclampsia. Nature usually tries to save the mother at the expense of the child, by shutting off the placental circulation by thrombosis, and thus removing from the mother the toxins which come to her from the fetus. In attempting to save the mother's life that of the fetus should be disregarded, although in operating the fetus should be given all possible protection.

We desire to add a word of caution to practitioners concerning the giving of a prognosis in cases of eclampsia. So deadly is the disease and so great the anxiety of relatives, that if the patient grows better, and especially if she is delivered, the physician is strongly tempted to express decided hopes for the future. No patient is safe until at least ten days have elapsed after eclampsia; gangrenous pneumonia, throm-

bosis and cerebral embolism, cardiac syncope through exhaustion of the heart muscle, acute nephritis, liver abscess, and cerebral edema have ended the lives of patients who apparently had escaped eclampsia. Severe hemorrhage from the genital tract may also occur at any time during the first ten days after the uterus is emptied. On the other hand, so desperate are some of the cases which recover that the physician should not give an unfavorable prognosis. He should, however, decline absolutely to commit himself, but should state that the patient has a very serious disease and urge the relatives of the patient to assist him in his treatment in every possible way.

Should the child survive, the physician must remember that it also is toxemic. The child should not nurse the mother for several days at least, but should be given water very freely, and the intestinal tract should be very thoroughly irrigated twice in twenty-four hours. The child should be fed dilute cow's milk, predigested, and should be kept as warm as the temperature of the weather and the child's condition demand. Prognosis as regards its life should be absolutely declined, for many of these children die within a few days after birth from some manifestation of toxemia.

THE GUAIACOL TREATMENT OF PNEUMONIA.

BY M. G. CAIN, M.D., EPPING, N. H.

Two years ago I reported in the THERAPEUTIC GAZETTE sixteen cases of croupous pneumonia treated with guaiacol with no mortality.

This communication is supplementary to that report. The number of cases treated has increased since that time to about fifty, besides a number seen in consultation, and with the same results. My cases have not been selected. Every case that I have seen, of whatever age or condition, has been treated by this method.

Believing that fifty consecutive cases of pneumonia without a death may be of interest, I will again bring my treatment of this disease to the attention of the profession. I will give an outline of my former

paper, making such changes and additions as added experience has suggested.

The remedy is rubbed into the skin. Any part of the body may be selected. The abdomen absorbs the medicine more readily than the chest, and this site is selected unless there is pain in the chest, when the seat of pain is chosen, as usually its use relieves the pain. No two applications are made in the same place. The skin is first thoroughly cleansed with soap and water, or with ether. The dose is from 5 to 30 minims, but the average dose is 20 minims for adults and 10 minims for a child one year of age. Children require a larger proportionate dose than adults.

The drug is dropped slowly from a medi-

cine dropper (the usual size holds about 20 minims) and rubbed in with the end of one finger, as much will be absorbed by the finger if care is not taken. It is usually all absorbed in one or two minutes.

This agent acts very promptly. In about an hour the patient perspires freely, and the temperature, pulse, respiration, and color of skin commence to improve. Within six hours the temperature drops from two to four degrees, and the general symptoms are much improved. I never repeat the treatment in less than twelve hours. In some mild cases the treatment is not repeated, the temperature not rising again much above normal. The average number of treatments is between three and four. Many cases receive two applications—an initial dose of 20 minims, followed in twenty-four hours by 10 minims. In fact, some of the worst cases require but two applications. I will mention two interesting cases that occurred this fall.

One case seen in consultation with Dr. M. was a child ten years of age. The disease had reached its second stage. The temperature was 104°, and the patient was very sick. Fifteen minims was used, and twelve hours later the temperature was 101° and the patient much improved. At the end of twenty-four hours after the first dose the temperature rose to 102°. Ten minims of guaiacol was used, and twelve hours later the temperature became normal and remained so.

October 14, 1907, I was called to see Mr. P., aged seventy-five. I found the patient very ill in the second stage of pneumonia. The right lower lobe was involved, the respiration labored, the eyes suffused and dull, and the skin of a dusky color. He was delirious, picking at the bedclothes and begging to be taken home. His heart was irregular and none too strong. He had suffered from valvular insufficiency for many years. His temperature was only 102.5°, but his general condition was exceedingly bad.

I used fifteen minims of guaiacol, and saw him again at 6 P.M., or nine hours later. The temperature was now 98°, and

all the symptoms had improved. On the next day at 9 A.M. the temperature was 97°, and the other symptoms about the same as at the last visit. At 5 P.M. the temperature was 101° and the delirium had increased. I used eight minims of guaiacol, and on the 16th the morning temperature was 97.5° and the symptoms had all improved. The temperature did not again rise above normal. He was up, dressed, and about the room in seven or eight days from my first visit.

This treatment appears to arrest the disease in some cases, and in all to shorten its course and render it less severe. In the greater part of the cases physical signs have not developed very much after treatment was commenced. Dulness usually does not increase, but soon diminishes, and the sputum if red is apt to lose its color in a day or two.

This agent moderates the action of the heart, but, in proper dosage, not unduly so. However, an agent of such potency is not to be trifled with. I never trust it in unskilled hands, but usually apply it myself.

Very little other medication has seemed necessary in these cases. Tonics, stimulants, and expectorants have been seldom employed. I have kept the bowels well open, fed the patient lightly, and insisted upon frequent sponge baths and plenty of fresh air.

The direct influence of this agent upon the thermic centers would explain the prompt fall in temperature, but to maintain a lower temperature and a general improvement in all the symptoms it must in some way affect the morbid element that maintains the disease.

How is this accomplished? Does it neutralize toxin? Does it destroy the pneumococcus or so impair its vitality as to render it an easy prey to the phagocyte or incapable of producing toxin in as large quantity or of as virulent quality? Or does it stimulate the white blood-corpuscles to renewed activity?

I first administered guaiacol by this method in cases of tuberculosis, and found that it seemed to produce the full effect of

creosote without the disadvantages of the usual methods of administering that drug. This experience led me to inquire if this agent might not be of benefit in pneumonia, a disease that has seemed to baffle all our resources.

In my tubercular cases I have always combined guaiacol with the open-air treatment, and while I have had good results I have not known how much effect to attribute to the guaiacol, but in my pneumonia cases the results have been excellent.

FIFTEEN CASES OF ANTHRAX TREATED IN THE PHILADELPHIA MUNICIPAL HOSPITAL, WITH ABSTRACTS OF HISTORIES, LABORATORY NOTES, AND AUTOPSY NOTES, AND COMMENTS ON TREATMENT, INCLUDING ANTIANTHRAX SERUM.¹

BY B. FRANKLIN ROYER, M.D.,

Chief Resident Physician, Philadelphia Municipal Hospital;

AND

E. BURVILL-HOLMES, M.D.,

Director of the Bacteriological Laboratories, Henry Phipps Institute, Philadelphia; Formerly First Assistant to the Chief Resident, Philadelphia Municipal Hospital.

Within two and one-half years fifteen cases of cutaneous anthrax have come under our care in the Municipal Hospital. During this interval a number of cases have been seen by physicians in private practice in Philadelphia, and the Division of Vital Statistics records a number of deaths from this disease. It is not at all surprising that so many cases should develop in a city with such extensive manufacturing industries. In her tanneries, leather establishments, and manufactories of hair products and woollens is her greatest danger.

The fifteen cases coming under our personal observation have all been victims of their peculiar vocations. Six worked regularly in hair; five were steadily handling hides; two, cases 4 and 10, hauled hides incidentally; one worked in leather; and one skinned a cow dead of what was supposed to be anthrax. The diagnosis was confirmed bacteriologically after coming under observation in all except cases 3 and 12. In each of these the anthrax bacillus was found in the Pennsylvania Hospital before admission. In six patients the pustule was on some part of the face, in five on the neck, in two on the forearm, and in one on the finger. Fourteen were males, one was a female.

While studying these histories two cases of internal anthrax occurring in Philadelphia were investigated by the hospital staff. Both cases were hide-workers, and Dr. Daniel Longaker, the physician, had made a provisional diagnosis of internal anthrax before signing the death certificate in each. In the first case some slight edema was noted on the chest without visible signs of pustule, and blood aspirated from the heart by one of us (Dr. Holmes) showed anthrax bacilli in smear preparation and in culture. In the other case the diagnosis was made chiefly on the history of the blood-spitting and sudden death, without sign of tuberculosis or pneumonia. This case was investigated by our associate, Dr. M. F. Percival, who easily demonstrated anthrax bacilli in aspirated heart's blood, while a culture studied later showed typical anthrax organisms. Both men were hide-workers.²

It is of some interest to note that of the three fatal cases, two, numbers 2 and 4, had anthracemia when blood cultures were made soon after admission, and the third, number 10, had a positive blood culture eighteen hours after admission; that case 2 showed anthrax bacilli in the feces before death; and that case 4 had these organisms in his sputum. It is interesting to note that at autopsy, and later in histological study

¹Read by Dr. Royer before the Pennsylvania State Medical Society in Reading, Pa., Sept. 26, 1907, and accompanied by a lantern demonstration.

²Report of these two cases to be published elsewhere, by Drs. Longaker and Holmes.

of the tissues, anthrax bacilli were demonstrable in nearly every organ of each cadaver.

From a pathologic standpoint it is of interest to note that each fatal case had marked edema of the superficial tissues and of the lungs; that a high-grade fatty liver was found in each; that acute nephritis (hemorrhagic in case 4) was constant; that the spleen was very friable and showed in each a high-grade coagulation necrosis; that fatty heart was present in the three cases; and that marked pulmonary infarction was met with in case 3.

The blood was studied for change in leucocytosis in 13 cases, the highest count being 25,000 per cubic millimeter, in case 2, a fatal case, and the next highest 20,600 per cubic millimeter, in a case with marked edema (see photograph of case 5). Two fatal cases, numbers 4 and 10, showed no marked increase in leucocytes. The average leucocyte count in 13 cases was 13,900 per cubic millimeter.

Eleven differential leucocyte counts were made, with the average of 77.6 per cent poly. L., 17.7 per cent L. L., 5.3 per cent

S. L., 3 per cent E., .01 per cent B., and .04 per cent M. The increase noted was almost entirely in the polymorphonuclear cells. The highest count in this type of cell ran 88.8 per cent in case 2 and 80 per cent in case 11, a female with a rather mild infection. Blood cultures were made in nine cases, with a report of anthrax bacilli in the three fatal cases and a negative report in the six cases recovering. In the two cases after death, study requested by Dr. Longaker, anthrax bacilli were found in smear preparations from heart's blood and in culture.

The treatment practiced in these cases was excision, free drainage of edematous area, and phenol injection in No. 1; excision, drainage of edematous area with removal of axillary lymph nodes, and antiseptics in No. 4; excision and cauterization with powdered bichloride of mercury in No. 7; excision and cauterization with powdered bichloride of mercury and injection of antianthrax serum in Nos. 5, 6, 8, 13, 14, and 15; with serum and late excision and cauterization in No. 10, and Sclavo's serum only in Nos. 2, 9, 11, and 12; while No. 3 appears to have cured himself. Three

TABLE SHOWING OCCUPATION, DAY OF DISEASE, LOCATION OF LESION, TREATMENT, AND RESULTS.

No.	Year.	Name.	Occupation.	Location of lesion.	Day of disease.	Treatment. *	Results.	Remarks.
1	1905	O. J. ¹	Farmer.	Fore arm (left).	8th.	Surgical and phenol injection.	Cured.	Skinned cow dead of anthrax two days previously.
2	"	J. V. ²	Hide-sorter.	Right neck.	3d.	Serum only.	Died.	Anthrax bacillus in blood cultures.
3	1906	A. F. ³	Hide-scraper.	Right ring finger.	14th.	Local antiseptic.	Cured.	
4	"	E. G. ⁴	Teamster.	Right forearm.	3d.	Surgical and antiseptic.	Died.	Hauled hides three days before.
5	"	S. S.	Morocco-worker	Neck (left).	5th.	Serum and surgical.	Cured.	
6	"	L. H.	Hair-sorter.	Left neck.	3d.	Serum and surgical.	"	
7	"	T. C.	Hide-sorter.	Lower lip (right).	5th.	Surgical.	"	
8	1907	A. S.	Hide-stacker.	Fore head (right).	12th.	Serum and surgical.	"	Delirium tremens after operation.
9	"	J. S.	Hide-stacker.	Face (left side).	21st.	Serum only.	"	
10	"	H. P. ⁵	Stevedore.	Neck (left).	4th.	Serum and late surgical.	Died.	Unloaded cargo of hides three days previously.
11	"	Mrs. S.	Hair-sorter.	Neck (right).	4th.	Serum only.	Cured.	
12	"	S. C. ⁶	Hair-washer.	Right cheek.	4th.	Serum only.	"	
13	"	M. M.	Hair-comber.	Right cheek.	5th.	Serum and surgical.	"	
14	"	S. S.	Clerk and hair dealer.	Chin (left side).	3d.	Serum and surgical.	"	Handled bales of hair.
15	"	P. S.	Hair-spinner.	Right cheek.	2d.	Serum and surgical.	"	

¹ Operation by Dr. Schwartz before admission to Municipal Hospital.

² Serum probably not absorbed; edema too great.

³ Not confirmed bacteriologically by us; organisms found in Pennsylvania Hospital.

⁴ Died next day of uremia, probably due in part to anesthetic: a chronic alcoholic.

⁵ Lesion was not removed for 24 hours after admission; death half an hour after operation, sudden, after retching; one-half grain cocaine used.

⁶ Organisms found in Pennsylvania Hospital before admission.

cases died, one (No. 2) having serum only, and much of it probably not absorbed; one (No. 10) had serum, and as a last resort excision and cauterization; and one had excision with antiseptic gauze drainage, and died of uremia in eighteen hours.

Only general conclusions regarding the treatment of anthrax may be drawn from

power of its blood serum is determined by the injection of rabbits with definite quantities of anthrax culture of known virulence and certain quantities of this serum. The serum is marketed only when capable of showing a high degree of protection toward virulent anthrax bacilli. The serum is not offered for sale by American serum manufacturers.

Special attention is called to the short incubation period found in three cases. In case 1 the papule was seen two days after skinning a cow; case 4 hauled a single load of hides three days before sickening with anthrax; and case 10 unloaded a cargo of hides three days before the pustule developed. Other possible sources of infection were unsuccessfully sought in each case.

Abstracts of each case history follow:

Case 1.—C. J., male, aged 24, farmer. Admitted Jefferson Hospital, February 22, 1905, with two anthrax pustules on left

CASE 1.—Photograph eighth day of disease by Dr. E. N. Fought. Note point in upper arm where edema ends abruptly.

these cases, and these chiefly from our judgment of individual cases.

Serum treatment alone in certain cases seems to be curative. Serum combined with excision and cauterization with bichloride of mercury would seem to give best results in severe cases, while excision and cauterization alone will undoubtedly cure many.¹

The serum was prepared in Professor Sclavo's laboratory in the University of Sienna, and may be used with the same degree of safety as may other sera. The dose depends upon the animal from which the serum has been secured and his susceptibility to anthrax. It is not yet standardized, hence the manufacturer's advice is followed with each lot of serum. From 10 Cc. to 40 Cc. may be given at a single dose—10 if given intravenously, 40 if given under the skin.

The serum is made as follows: An ass, or goat, or sheep, preferably an ass, is vaccinated with an attenuated anthrax culture; in ten or twelve days with a more virulent culture; and so on with cultures of increasing virulence until enormous doses of the most virulent anthrax bacilli are safely borne. After several months of this treatment the animal is bled, and the protective

¹A full review of surgical, medical, and serum treatment given by Schwartz and Royer. Transactions Philadelphia Academy of Surgery, 1905.

CASE 1.—Photographs showing condition when well and exhibited before Academy of Surgery

forearm. Lesions developed two days after skinning a cow dead of anthrax (?). Onset small, itching, burning papule; third day, bleb formation with areola about papule and beginning edema of forearm. Sixth day, constitutional symptoms, fever, severe headache, pain in entire arm, with great edema of extremity. Eighth day, surgical treatment; recovery.

Treatment: Deep excision of pustules, injection of phenol about site of pustule and about upper arm beyond limit of edema, free incision along entire arm and hand, moist bichloride of mercury dressing.

Smear preparation and culture studied in Jefferson Hospital showed anthrax bacilli; operation performed there by Dr. Schwartz. Blood count made in Municipal Hospital after operation showed 19,400 leucocytes, 3,240,000 erythrocytes. Differential count: Poly. L. 87.68 per cent, L. L. 7.66 per cent, S. L. 2.66 per cent, E. 2 per cent. Slight mercurial disturbance during convalescence. Recovery with slight limitation of motion of elbow joint. (See accompanying photographs.)

Note.—Period of incubation, two days. Case previously reported by Schwartz and Royer, Transactions Philadelphia Academy of Surgery, 1905.

Case 2.—J. V., male, aged 57, hide-sorter, admitted December 10, 1905, third day ill with anthrax. Lesion on right neck beginning as a painful papule. Second day, severe headache, severe vomiting, marked

CASE 2.—Photograph taken fourth day to show increasing edema.

fever, with edema beginning. Third day, previous symptoms continued, with edema extending over entire right neck and upper part of chest; some prostration; fever 103.4°.

Smear preparation, cultures from pustule, blood culture, and animal experiments all showed anthrax bacilli, and later studies of feces showed this organism. A leucocyte count on admission showed 25,000 cells per centimeter. Differential count: Poly. L. 88.8 per cent, L. L. 9.3 per cent, S. L. 1.6 per cent, E. 0 per cent.

Treatment: Sclavo's antianthrax serum subcutaneously in abdominal wall—60 Cc. third day, 60 Cc. fourth day, 20 Cc. (entire supply) fifth day. Death sixth day; conscious until near death.

Autopsy showed fatty degeneration of heart, acute parenchymatous nephritis, acute splenitis, pulmonary infarction, and general edema of subcutaneous tissues. Anthrax bacilli recovered at autopsy from stomach, spleen, heart, and both lungs. Histologic study by Dr. Geo. B. Foster showed same organism in liver, lungs, spleen, kidney, and heart, and confirmed the gross findings.

Note.—Patient ex-army officer (Austria), liberal user of spirits; stigmata of syphilis present. Edema of belly so great that serum was not well absorbed. (This was probably the first use of Sclavo's serum in America. Serum supplied by Prof. A. Sclavo to Philadelphia Board of Health on

CASE 2.—Photograph taken third day of disease to show small lesion at angle of jaw.

request of Dr. A. C. Abbott, Chief of the Bureau.)

Case 3.—A. B., male, aged twenty-six, hide-scraper, admitted March 13, 1906, fourteenth day of anthrax. Lesion began as a papule on ring finger of right hand; a

vesicle formed on second day, with areola and swelling of finger. Patient denies constitutional symptoms and never actually quit work. Hand never much swollen. Anthrax bacilli found in Pennsylvania Hospital. On admission, a hard brown eschar nearly

TEMPERATURE

PULSE

RESPIRATION

CASE 2.—Chart showing great drop in temperature following injection of antianthrax serum. Edema continued extending until patient died.

three-fourths of an inch in diameter on dorsal surface of right finger, third phalanx, a reddened areola surrounding this eschar, and entire finger considerably swollen.

Treatment: Eschar removed, moist bichloride dressing applied; no internal medication.

Note.—This diagnosis was not bacteriologically confirmed by us. Probably a case of spontaneous cure.

Case 4.—E. G., male, aged forty, teamster, admitted April 20, 1906, third day ill with malignant pustule on right forearm, external surface. Onset small, painful "pimple," increasing in size by second day, with distinct areola and edema. By third day the pustule was one-half inch in diameter, with blebs irregularly grouped about lesion, and great edema of entire arm and side of chest. Specific organism found in smear preparation and by culture. Patient a powerful man, a heavy drinker, with kidney and heart lesion and history of syphilis. Blood count on admission: Leucocytes 12,600, poly. L. 68 per cent, L. L. 12.3 per cent, S. L. 9 per cent, B. 7 per cent, E. 0 per cent.

Treatment: Under chloroform anesthesia pustule was excised, free incisions made along entire arm and hand, resection of large axillary glandular masses done, and wet bichloride gauze drainage applied. Death in nineteen hours from uremia.

Autopsy showed fatty heart, chronic pleurisy, edema of lungs, fatty infiltration of liver, chronic diffuse nephritis with acute hemorrhagic nephritis. Organism recovered at autopsy from heart, liver, and spleen. Histologic study showed anthrax bacilli in lungs, liver, spleen, pancreas, and kidney, and confirmed the autopsy findings. In the kidney many capillaries were almost plugged with bacilli.

Note.—A load of hides, the only hides handled, hauled three days before illness began.

Case 5.—S. S., male, aged twenty-four, morocco-worker, admitted October 23, 1906, third day ill with anthrax of left neck (see accompanying photograph). Onset not def-

CASE 5.—Photograph taken the fifth day of disease. Note great edema of neck, shoulders, and breasts.

initely learned. (Patient a Russian unable to speak English.) On admission a brown crust was seen in left neck with serum oozing from beneath it. The entire neck was edematous and greatly swollen, with marked induration about this crust. Temperature 103°, prostration great. Smear preparation from serum and cultures studied later showed anthrax bacilli. Blood

CASE 5.—Photograph a few days before being discharged.

culture, nose culture, and sputum studies negative for anthrax. Leucocytes 20,600, poly. L. 77 per cent, L. L. 19 per cent, S. L. 4 per cent.

Treatment: Excision of lesion under cocaine anesthesia; wound dusted with

powdered bichloride of mercury and dressed dry. Nine cubic centimeters of Sclavo's antianthrax serum given intravenously (remaining supply destroyed by accident). Recovery rapid, but after two days complicated by slight secondary infection and pus

TEMPERATURE

PULSE

RESPIRATION

formation in edematous area of neck and upper chest. (See photograph when well.)

Case 6.—L. H., male, aged twenty-seven, hair-sorter, admitted November 24, 1906, third day ill with malignant pustule of left neck. Onset small, painful papule, chilly

sensation, same day. Second day, severe headache, chilly, fever, loss of appetite, painful neck, and swelling noted about the lesion. Third day, dizzy, chilly, headache, loss of appetite, edema up to zygoma and down to near clavicle, induration immedi-

TEMPERATURE

PULSE

RESPIRATION

ately adjacent to typical pustule. Temperature on admission 102°. Smear preparation from pustule and culture confirmed diagnosis. Blood culture sterile, leucocytes 9800, poly. L. 67 per cent, L. L. 31 per cent, S. L. 1.7 per cent, E. 3 per cent.

Treatment: Excision under cocaine anesthesia, powdered bichloride in wound, with dry dressing. Ten cubic centimeters antianthrax serum intravenously, and repeated in same manner twenty-four hours later. Uneventful recovery.

Case 7.—T. C., male, aged twenty-six, hide-sorter, admitted November 24, 1906, fifth day ill with anthrax of right lower lip, one-half inch below vermilion margin. Onset began as painful "pimple," opened by barber while being shaved on second day. Third day, a distinct hard areola about the pustule; more pain and swelling. Fourth day, severe pain, swelling of right chin and lower part of face; tender, swollen glands under chin. Fifth day, lesion half-dollar in size, brownish in color, crusted, pussy around edges, with edema of chin and entire lower lip, and induration in submental glandular region. No prostration on admission; temperature 99° F. Smear preparation, cultures, and white-mouse inoculations tallied in showing anthrax bacilli. Leucocyte count 13,600, poly L. 77.5 per cent, L. L. 13 per cent, S. L. 9.6 per cent, E. 0 per cent.

Treatment: Excision of pustule, powdered bichloride in wound, dry dressing. Slight rise in temperature two days after operation. Cauterization slough extended through to the mouth, causing a sinus, making convalescence tedious. Recovery.

Case 8.—A. S., male, aged forty-three, hide-stacker, admitted January 8, 1907, twelfth (?) day ill with anthrax pustule of right side of forehead. Lesion began as "small, very painful pimple," which patient opened with finger-nail. Second day, larger, crusted, surrounded by areola, painful, some swelling of right forehead. Third day, chill, fever, more swelling of right forehead, serum weeping from beneath crust, eye swollen. For the next five or six days the swelling lingered about the eye and

forehead and right side of face, part of the time the eye being closed and greatly indurated. No severe pain during this time, and work was continued until the seventh day of illness. Medical opinion was sought because of annoyance from serum running over face, and the swollen eye. Temperature 100° on admission, eye closed by hard edema, face swollen on right side, and serum flowing over eye and cheek.

Smear preparation, culture studied later, and animal experiments showed the lesion to be anthrax. Leucocyte count on admission 18,800, poly. L. 63.7 per cent, L. L. 26.3 per cent, S. L. 8.7 per cent, B. 3 per cent, M. 3 per cent. Blood culture sterile.

Treatment: Pustule excised under local anesthesia; 10 Cc. antianthrax serum given intravenously, repeated twice next day and day following, then a daily dose of 20 Cc. for two days being given; total 90 Cc. During this time patient had fever and great mental confusion. Under hyoscine and whisky mental equilibrium was restored (probably delirium tremens). Patient excessively heavy drinker. Recovery in seventeen days.

Case 9.—J. S., male, twenty-nine years of age, hide-stacker, admitted February 15, 1907, about twenty-first day ill with anthrax pustule on left side of face. Onset painful "pimple," itching and burning. Top removed with razor. Second day, face swollen, great pain, headache, no sleep. Third day in bed, all symptoms worse. About fifth day visited physician and received ointment for local use (probably ichthyol). Swelling continued for one week longer, and greater part of time was in bed; the third week swelling subsided, except in glandular area. On admission a typical crust of anthrax was seen about the middle of the left cheek with a good deal of glandular swelling beneath the left jaw. Smear and culture preparations in the Pennsylvania Hospital showed anthrax bacilli, and smear preparation by Dr. Percival in the Municipal Hospital confirmed these findings. Blood culture sterile. Leucocyte count 19,200.

Treatment: Antianthrax serum, 12 Cc.

intravenously, and a daily dose of 10 Cc. for four days; total 52 Cc. Lesion undisturbed, but was kept covered with moist bichloride dressing. Recovery with complete healing in twenty-three days. No organisms found in culture made from site of pustule twelve days after admission.

Case 10.—H. P., male, aged forty-five, stevedore (unloaded cargo of hides), admitted March 7, 1907, fifth day ill with anthrax pustule of left neck. Onset painful "pimple," no constitutional symptoms experienced; swelling noted third day, and slight fever on the fourth day. A brown crust $4\frac{1}{2}$ millimeters in diameter, with a red areola one millimeter wide surrounded with moderate edema extending to the ramus of the jaw and down to the clavicle, constituted the picture on admission. No serum exuded beneath crust. Smear preparation, culture, and white-mouse inoculation each showed the bacillus anthracis. Blood culture eighteen hours after admission

CASE 10.—Photomicrograph by Prof. Allen J. Smith, showing section of spleen with many anthrax organisms. High-grade coagulation necrosis not well shown. Section prepared by Dr. George B. Foster.

showed anthrax organisms. Leucocyte count 9600, poly. L. 70.3 per cent, L. L. 18 per cent, S. L. 11.4 per cent.

Treatment: 20 Cc. of antianthrax serum subcutaneously, moist bichloride to eschar, 2 ounces of whisky every fourth hour. During the next twelve hours edema extended around the neck and over the chest to nipples, up to the middle of the forehead on both sides, and some difficulty of breathing developed. Sixteen hours after admission 40 Cc. serum given intravenously and repeated in three hours. Twenty-four hours after admission edema extended over trunk to upper third of thigh, over face to top of forehead, and over the back in its upper half. As a last resort the pustule was excised under cocaine anesthesia, $\frac{1}{2}$ grain of cocaine being used. One-half hour later, while retching, patient developed asphyxia, followed by convulsions and rapid death.

Autopsy showed edema of lungs, chronic pleuritis, acute splenitis, fatty infiltration of

CASE 10.—Photomicrograph showing section of lung with numerous anthrax bacilli. Section prepared by Dr. George B. Foster; photograph by Prof. Allen J. Smith.

liver, chronic interstitial nephritis with acute nephritis superimposed.

Histological study showed anthrax organisms in lungs, liver, spleen, and kidney, and confirmed the autopsy findings.

Note.—Unloaded cargo of hides, the first in months, three days before illness was noted.

Case 11.—Mrs. S., aged thirty-five, female, hair-sorter, admitted March 7, 1907, fourth day ill with anthrax pustule of right side of neck. Onset anorexia, chill, headache (all noted before papule was seen). Pain in region of papule first called attention to it.

Symptoms grew gradually worse with swelling in the region for three days, although she continued to work. Her employer, Mr. Peter Woll, Jr., diagnosed her condition as probably being anthrax and sent her to us for opinion. On admission a brown eschar one centimeter in diameter with a red areola was seen in the middle of the right cheek. Some edema of right half of the face and side of the neck. Smear preparation, culture, and white-mouse injection proved the anthrax bacillus. The mouse inoculation suggested low virulence. Leucocyte count 7400, poly. L. 80 per cent, L. L. 14 per cent, S. L. 6 per cent.

Treatment: 20 Cc. Sclavo's serum intravenously, followed in twenty-four-hour intervals by 20 Cc. subcutaneously; total 60 Cc. Pustule not disturbed but covered with moist bichloride dressing. Recovery in eleven days.

Case 12.—S. C., male, aged seventeen, hair-washer, admitted April 2, 1907, fourth day ill with anthrax pustule of right cheek. Onset painful, itching "pimple." On third day some swelling and a dried central crust formation. On admission central crust $2\frac{1}{2}$ centimeters in diameter with a small red areola, no fever. Smear preparation and cultures at Pennsylvania Hospital showed anthrax bacilli; not confirmed by us. Leucocyte count 58,000, poly. L. 75.6 per cent, L. L. 18.5 per cent, S. L. 2.5 per cent, E. 3 per cent, B. 5 per cent.

Treatment: 20 Cc. antianthrax intravenously in belly wall, followed by 20 Cc. next

day. A moist bichloride dressing applied to the pustule, otherwise not disturbed. Recovery in seven days.

Case 13.—M. M., male, aged seventeen, hair-comber and washer, admitted April 14, 1907, fifth day of anthrax; pustule on right cheek. Onset "itching pimple," increasing each day in size with swelling extending gradually to ramus of jaw, and by fourth day to submaxillary glandular region. On admission denies having been ill and complains only of local distress. No fever was found. Anthrax bacilli found in smear preparations and in culture from pustule. Guinea-pigs inoculated died in twenty-three hours.

Treatment: Pustule excised under cocaine anesthesia; powdered bichloride of mercury dusted in wound and a dry dressing applied. Ten cubic centimeters anti-anthrax serum given in midcephalic vein and 5 Cc. subcutaneously. Rapid recovery; discharged in eight days, wound free from anthrax bacilli, but not yet fully healed.

Case 14.—S. S., male, aged twenty, clerk for hair-dealer, and often handled bales of hair. Admitted May 31, 1907, third day of

CASE 14.—Photograph showing anthrax lesion of chin.

anthrax on the right side of chin. Onset painful, itching papule, opened while shaving, followed by scab formation, and painful induration with loss of appetite. Third day, chill, fever, and malaise. On admission

temperature 104°, central brown eschar 2 centimeters in diameter, with seropurulent marginal discharge. Very little swelling, but marked induration about pustule (see photograph). Smear preparation in Pennsylvania Hospital and smear preparation and cultures studied here showed the anthrax bacillus. Leucocyte count 18,000, poly. L. 72.2 per cent, L. L. 6 per cent, S. L. 2 per cent, E. 0 per cent, B. 4 per cent.

Treatment: Excision under cocaine anesthesia; wound dressed with bichloride powder. Ten cubic centimeters Sclavo's serum given intravenously, and repeated next day. Prompt recovery. Discharged in fourteen days, with wound not quite healed.

Case 15.—P. S., male, thirty-four years, hair-spinner, admitted August 26, 1907, second day ill with anthrax pustule of right cheek. Onset itching sensation at site of papule, later smarting noted, and "pimple formation." Swelling at this site by second day, with slight fever. On admission a central lesion resembling a ripening pustule $\frac{1}{4}$ inch in diameter encircled by a red areola $\frac{1}{4}$ inch wide, the whole surrounded by hard induration; the swollen area extended to the submaxillary region, with distinctly palpable glands under the middle of

CASE 15.—Photomicrograph showing findings in smear preparation made to confirm a diagnosis of anthrax. Preparation by Dr. Percival.

the right jaw. Temperature 100°. Smear preparation and culture made by Mr. Paul G. Weston showed the anthrax bacillus. Leucocyte count 10,000 per centimeter. Blood culture sterile.

Treatment: Under cocaine anesthesia free excision was practiced; wound painted with pure phenol, followed in a few minutes with pure alcohol, and in five minutes covered by 1:1000 moist bichloride dressing. Ten cubic centimeters antianthrax serum given intravenously and an ounce of whisky by mouth four times a day. Next day swelling increased in region; 1:2000 bichloride dressing applied, and 30 Cc. of serum given intravenously. Second day after operation swelling was less noticeable, and culture taken at this time showed pure growth of anthrax. Wound dusted with bichloride powder and serum given subcutaneously. Great swelling followed bichloride irritation, and a large vesicle formed about the wound. Further doses of serum given subcutaneously; total 120 Cc. Under local application of saturated solution magnesium sulphate and ice-bags the swelling subsided. A good recovery (somewhat tedious) followed.

Note.—Pronounced early symptoms with persistence of organisms after vigorous treatment suggested great virulence. Animal experiment not done.

CASE 15.—Photograph showing a typical second-day anthrax pustule. Note striking resemblance to a vaccine vesicle.

A NEW METHOD OF TESTING THE FUNCTIONS OF THE DIGESTIVE APPARATUS.¹

BY MAX EINHORN, M.D.,

Professor at the New York Postgraduate Medical School, New York.

Any improvement in diagnosis is usually accompanied with therapeutic success.

The testing of the functions of the stomach has entirely changed the treatment of diseases of this organ.

For a long time clinicians have been anxious to find a suitable method for ascertaining the functions of the bowel in intestinal disorders. Most chemical analyses of the feces, which are very complicated and tedious, gave too many varying results to be of clinical value.

Schmidt's test-diet for the examination of the feces marks a decided advance, the only objection being that for general use this method of examination is too tedious (it takes two to three days until feces are obtained from the test-diet), and the results (microscopical examination for starch and muscle fiber) are not sufficiently distinct.

For several years I have endeavored to work out a practical method for testing the functions of the intestinal tract, and the result of this work I would like to submit to your valuable judgment for kind consideration.

Method.—The principle of the method consists in giving—instead of examining the entire stool—test substances with the food to the patient and watching the fate of the latter. This can best be accomplished by attaching the test substances to beads, giving them to patients and recovering them after they have passed the digestive tract. These beads are then examined in order to see whether the substances have disappeared or not. This method is designated for short as the bead test.

Practically this test is done as follows: Patients are given in a gelatin capsule a string of beads with the following substances: catgut, fish-bone, meat, thymus, potato, mutton fat. After administering the capsule every stool is examined with the stool sieve until the bead string has been

recovered. If diarrhea is present the sifting may not be necessary, as the bead string can readily be seen (usually at the bottom of a glass vessel).

Under normal conditions the bead string appears after one or two days. It is then rinsed in cold water and examined. If digestion is normal we find that catgut, meat, and potato (except the skin) disappear entirely, thymus and fat almost entirely, whereas the fish-bone usually disappears, but occasionally it may be present. The nuclei of the thymus always disappear. In pathological conditions deviations from the normal are observed not only in regard to the time of recovery of the beads (disturbances of motility), but also in regard to the presence of the food substances (disturbances of the digestive function).

Whereas the motility of the digestive tract can be clinically determined by the periodicity and frequency of the movements of the bowel, as yet we have no means of judging the digestive process in the intestine. I will therefore confine my remarks to the examination of the digestive functions.

I have employed the bead test in nearly 200 patients, and believe that it is well suited for obtaining an insight into the digestive process.

Contrasting with the usual stomach examination—indicating the beginning of the digestive process—the bead test shows us the result of the entire process of digestion.

Roughly speaking, the entire field of gastric and intestinal dyspepsias (without grave organic lesions) may be divided into two groups:

1. Cases with apparently normal digestive functions (true nervous dyspepsias).
2. Cases with functional disturbances (functional dyspepsias).

In gastric affections the above classification has been used for some time. For the intestine a similar subdivision has become possible through the bead test.

¹Read before the Japanese Society for Diseases of the Digestive Organs, Sept. 18, 1907, at Tokio.

It appears more convenient to consider here intestinal disturbances only.

Group I: Pure Nervous Intestinal Dyspepsias.—The patients complain of various symptoms (fulness, wind, restless sleep, inability to concentrate their mind, general weakness, and lack of energy). Examination reveals an entirely negative result. The mobility is good and the bead test shows normal digestion.

Group II: Genuine Intestinal Dyspepsias.—Besides numerous subjective complaints (tension, rumbling, irregular stool, etc.) the bead test shows evident deviations from the normal. This group can be subdivided into two subordinate divisions:

(a) Cases in which the digestion of all three nutritive substances (albumen, fat, carbohydrate) is disturbed—"Dyspepsia intestinalis universalis seu completa."

(b) Cases in which the digestion of one or two nutritive substances is faulty—"Dyspepsia intestinalis partialis."

This classification of functional intestinal diseases enables us to make a more accurate diagnosis, and at the same time gives us certain indications for the treatment.

In the first group of pure nervous intestinal dyspepsias without any functional disturbances it will not be necessary to

prescribe any special diet or treat the intestine itself; we must rather strengthen the nervous apparatus (hydrotherapy, massage, climate, suitable occupation without over-exertion, etc.).

Group II of genuine functional intestinal dyspepsia will require a suitable diet: For dyspepsia intestinalis completa, first a fluid diet, later food in finely subdivided form; in partial intestinal dyspepsia we must limit the amount of those food substances the digestion of which is disturbed. Medicinally we can also proceed with more certainty and success.

In dyspepsia intestinalis universalis, also in those forms of dyspepsia intestinalis partialis in which the albumen or fat digestion was disturbed, the pancreas preparations (especially pankreon) seemed to me to be of benefit.

In that great class of intestinal dyspepsia in which the starch digestion alone is disturbed, taka-diasase (Takamine) has proved of especial value.

The dark field of intestinal diseases still lies almost untilld. Let me hope that the bead test may in the hands of all of us contribute its mite to the clinical exploitation of this important branch of human pathology.

THE TOXIC EFFECTS OF UROTROPIN.

BY JOHN GILLESPIE BEARDSLEY, M.D., L.R.C.P. (LONDON).

Physician to the Phipps Institute and Assistant Physician to the Out-patient Department of the Jefferson Medical College Hospital, Philadelphia.

Very few new drugs have proved as useful and generally satisfactory to the profession as has urotropin. This is a trade name for the pharmacopœial preparation hexamethylenamina, $C_6H_{12}N_4$, which is made by the action of formaldehyde upon ammonia. Other trade names which are supposed to represent the same combination are formin, cystogen, aminoform, cystamin, etc., while helmitol is a preparation of urotropin combined with citric acid.

Urotropin was introduced by Nicolaier, of the University of Berlin, in 1895 as a solvent for uric acid concretions, but later was advocated as a diuretic, and more particularly as an agent to prevent the growth

of bacteria in the urine. It is, however, as a urinary antiseptic that the drug has proved its worth. Widowitz was the first to advise its use in scarlet fever, and the good results which he reported in the prevention of nephritis in this disease were confirmed by Buttersack, Murua, Lubowski, Fuchs, and others.

Shortly after its introduction many observers noted that urotropin exercised beneficial effects upon cases of cystitis, and a little later Guaird, Easton, Richardson, and Coleman found that the bacilluria during and following typhoid fever could be controlled by its use. As with any new drug that suddenly acquires a reputation

for value and safety, there were many who used it in excessive doses and without precaution as to its proper dilution, and, as could have been anticipated, a few cases of toxic action were reported.

Knowing that the virtue of the drug lies in the liberation of nascent formaldehyde in the glomeruli and tubules of the kidney (this has been denied by several observers), neutralizing the toxins and destroying the germs of disease, and recalling the action of formaldehyde, even when diluted, upon any portion of the body or upon the various mucous membranes, one can readily understand how from the careless use of this drug toxicity may result. That a drug may be of great value and still possess elements of danger in its use is true of most active remedies, and urotropin is not an exception.

There is scarcely a drug in common use to-day concerning the value and safety of which can be heard so many diametrically opposed opinions. Many physicians state that urotropin in their hands has proved a particularly useful agent and that they have yet to see any bad results from its administration; others state that the remedy has proved disappointing to them and in many cases has brought about complications, which, in their opinion, would be sufficient to cause it to be placed in the list of unsafe drugs. Between these extreme views we find the opinion of the practitioner whose experience has taught him the value and also the danger of the drug, and he uses it as he would use any other toxic substance, by being constantly upon the watch for any signs of toxicity. Despite the common knowledge of the occasional bad effect of urotropin, when one consults the literature upon the subject he will find very few cases have been reported in which the drug caused complications, and my purpose in calling attention to this subject is to record three cases of the toxic effect of urotropin and to review the literature of the subject to date. The three cases to be reported are from the out-patient medical department of the Jefferson Medical College Hospital, in the service of Dr. J. C. Wilson, and have been seen during the last two months.

The first case was that of an aged man

with a well-marked cystitis, due to retention of urine by an enlarged prostate gland. The urine was examined and found to contain a quantity of pus, but was acid in reaction. The patient was given urotropin in five-grain doses three times daily, and was warned to dissolve the tablet in a large glass of water before taking it. The patient returned in two days with the complaint that he had suffered much pain in the region of his bladder and was compelled to urinate much more frequently than before. He stated at this time that he was "passing blood," and a microscopical examination of the urine at this time revealed the presence of blood. In two days after the drug was discontinued no blood cells were found, but when two grains of the drug was again given blood cells at once appeared in the urine.

The second case was that of a young woman who was given urotropin to clear an alkaline urine which showed well-marked phosphaturia. After taking forty grains of the drug in five-grain doses the woman complained of intense itching of the skin, with a sense of discomfort in her abdomen. An examination of her chest and back revealed the presence of a well-marked scarlatiniform rash. The urine contained no blood cells, and the reaction of the urine was acid at this time. The rash disappeared during the afternoon of the day it was first seen, having been visible about six hours. Several days later the same patient received, without her knowledge, two grains of the same drug, and in two hours the same rash appeared accompanied by severe itching.

The third case was a man of seventy-two years, who walked into the out-patient department complaining that he was passing blood in his urine. In obtaining the man's history he was asked if he had been taking any medicine, and he answered that having had difficulty in passing his urine he consulted a physician, who prescribed for him, giving him some round tablets. He had taken four of them, when he had burning pain in the region of his bladder which radiated to his urethra, and shortly after this when he passed his urine he noticed

the last few drops were colored with blood. Investigation revealed the fact that the tablets were of urotropin, being five grains each.

In the *Pennsylvania Medical Journal* for June, 1907, the writer recorded three cases of hematuria due to small doses of urotropin, in none of which had more than thirty grains been administered. Having previously regarded the drug not only a valuable one, but with cautious use as to dosage and dilution one free from danger, even when its use was continued over long periods of time, these instances of toxic action coming within such a short period of time prompted me to consult the literature for similar cases.

The first account of any toxic action of urotropin was made by Nicolaier, who found that when he administered this remedy over long periods of time, and particularly in the large doses which he at this time considered proper, the patients began to complain of pain in the bladder with frequent micturition, and when the urine was examined microscopically a few red cells were found. Nicolaier at once reported the danger of overdosage and advised smaller amounts. The next account of any disagreeable symptoms following its use is reported by Schiller in 1899, who found that when fifteen grains had been administered in one case it produced burning pain in the abdomen and bladder.

W. Langdon Brown reports two cases of hematuria, both in typhoid fever patients who had received ten grains three times daily. The first developed pain in the bladder after taking 60 grains, and hematuria (macroscopic) was caused by 150 grains. The second patient developed pain in the bladder after 180 grains had been administered, and passed blood about the same time.

Another case developed hematuria, but as the man was also taking turpentine at the time it cannot with certainty be ascribed to urotropin.

Janet reports one patient with hematuria and one other with severe symptoms of renal colic due to the administration of small doses of this drug.

Millijan records the case of a young woman of eighteen years who was given urotropin as a diuretic in 5-grain doses, and when she had taken 105 grains complained of severe pain in the abdomen and passed blood in her urine.

Griffith reports that in the case of a young woman patient who was given the drug in 5-grain doses, well diluted, when 30 grains had been administered the patient complained of pain on urination, and of severe backache, swelling of the eyelids, weakness, and nausea. An examination of the urine showed a large amount of albumin, which before the drug was taken had been absent.

Forbes reports that in one patient, a man of sixty-two years, with mild cystitis, doses of 5 grains three times daily were administered, and when the patient had taken 90 grains he developed diarrhea, abdominal pain, and macroscopic blood in the urine.

Coleman reports an interesting case of a female patient in whom seven and a half grains of the drug caused hematuria and hemoglobinuria. That there could be no mistake as to the etiology, after several days, and without the patient's knowledge, he administered the drug again and the same symptoms again occurred.

Fuchs reviews the literature and calls attention to the fact that eight cases of hematuria followed the use of urotropin.

Easton records two cases of hematuria and three others of pain on micturition, also several other cases in which a few red blood cells were found on microscopical examination of the urine, which disappeared shortly after the drug was discontinued.

Nicolaier reported an interesting case in which a boy aged eleven years was given four grains of urotropin twice daily for some time and no bad effects were seen. Some time later the boy was again given urotropin, and a short time after the drug was administered he developed pain on urination and hematuria.

MacHardy reports that one patient who had received but two doses of two and a half grains each developed hematuria.

Gordon reports that after taking 115

grains of urotropin one of his patients developed hematuria, and later when the drug was once more administered the same symptom returned.

Von Karwowski reports a case of hematuria caused by small doses of urotropin.

Goldsmidt notes two patients in which hematuria occurred after taking small doses of urotropin for a short period of time.

Mogli reports several cases of hematuria, but it is only fair to state that he advised much larger doses than are now considered safe.

Parry, Griffith, and Buttersack have all reported severe albuminuria due to the irritant effect of the urotropin.

Kelly, Pederson, Groszklik, Dreschfield, Biss and Gotzl, and Salus all report cases in which there has been pain in the abdomen following the use of this remedy, and several have noted a pain in the region of the kidneys.

Richards and Drake-Brockman have seen diarrhea caused by small doses of the drug, and this is often complicated by griping pain.

Suppan states that in two of his patients there developed headache and ringing in the ears caused by urotropin, while Coleman called attention to the fact that rashes of various kinds were infrequently seen following its use.

Biss and Casper have reported each a patient who developed hematuria, while Petty and Da Costa by communication report two cases in which this complication developed.

This review of the literature for the toxic effects of urotropin is not a complete one, and consists of a review of a few of the leading journals, but enough has been found to be suggestive.

Considering first the toxic effect of the drug upon the gastrointestinal tract, we find that unless the drug is well diluted, and in certain cases even when well diluted before administration, symptoms of gastrointestinal irritation are very common. That there are patients who have an idiosyncrasy for this drug cannot be doubted, and there is also the possibility of an adulterated or at least an impure drug to be considered.

Concerning the occasional development of a rash following the use of urotropin, this complication is so infrequently observed that it would seem most reasonable to ascribe it to unusual susceptibility, for we well know that there are certain persons to whom the vapor of formaldehyde, even when greatly diluted, acts as a most decided toxic agent, and it is not unusual for one person in a family during the fumigation of a room or rooms to develop a rash. The headache and ringing in the ears can be accounted for in the same way. That individuals differ in their susceptibility to this drug is well illustrated in the reports of the cases which developed hematuria during its use. In one or two patients blood was found macroscopically where only five grains of the drug had been taken, and that well diluted, while other patients continue to take thirty grains a day for weeks without apparent harm.

That many of the slight toxic symptoms are not ascribed to the drug can be readily imagined, and it is at least suggestive that in one report dealing with a large number of scarlet fever patients to whom the drug had been administered from the first, although but one case of toxic action of the urotropin was recorded, there happened to be a larger number of hemorrhagic cases of the disease with blood in the urine than had been seen in years.

That urotropin is often an irritant to the kidneys cannot be doubted, but McGuire has proved by experiments upon himself that solutions injected into the body cause albuminuria at once, and hematuria in a short time. In one of his experiments he states that directly after the injection he was seized with cramp-like pains in the abdomen, and immediately there appeared blood in the urine.

That urotropin is used many times without bad effect is most certainly true, that it is an agent of great value is also true, but that there are many patients who suffer great pain and discomfort because of its use cannot be doubted; and that many of these cases are never published, and that the bad effects of the drug are often ascribed to the disease being treated rather

than to the remedy at fault, is a plausible view.

In conclusion it seems scarcely necessary to state that although urotropin is a valuable drug it is by no means the harmless agent which the profession have been led to believe, but when used a careful watch should be kept for symptoms of toxic action, and frequent examinations of the urine should be made, as red blood cells can be found in the urine before symptoms are complained of by the patient.

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THE TREATMENT OF TRACHOMA.¹

BY C. A. VEASEY, A.M., M.D., PHILADELPHIA,

Assistant Professor of Diseases of the Eye, Jefferson Medical College; Ophthalmic Surgeon, Methodist Episcopal Hospital.

So many pupils of the public schools of many of our large cities during the past few years having been found to be affected with trachoma, and so many areas of infection being known to exist in our large centers of population, it may not be amiss to discuss before this society the most satisfactory methods for treating the disease, inasmuch as a large proportion of such patients first come under the observation of the family physician.

It is not within the province of this paper to discuss the symptomatology or diagnosis of the affection. Suffice it to say that it must not be mistaken for vernal conjunctivitis, a disease which is being observed more frequently at the present time than in former years, and which occasionally resembles in some respects the condition of trachoma.

If we have a case of trachoma of com-

paratively recent origin which has not reached the stage in which the various distortions of the lids with the accompanying corneal changes are found, there are three chief conditions to be met. We must remove all excessive secretion, a condition eminently adapted to the growth of pathogenic microorganisms; we must remove the trachoma granules with as little damage as possible to the conjunctiva, thus preventing to a certain extent the third condition, or subsequent distortion of the lid, with the accompanying corneal changes. For the first purpose, notwithstanding the many recent adverse reports concerning the action of the drug, my best and most rapid results have been obtained with argyrol. The patient is instructed to irrigate thoroughly the conjunctival cul-de-sac with a physiologic saline or boric acid solution every two, three, or four hours, according to the character and amount of secretion, and immediately thereafter to instil a drop of a 25-per-cent solution of argyrol. The argyrol

¹Read before the Philadelphia County Medical Society, Nov. 18, 1907.

solution should be freshly prepared from the crystals at least every ten days, and should never be employed after it has become inky-black rather than brownish in color. My patients have employed solutions as strong as 50 per cent, though the 25-per-cent solution seems to answer the purpose just as well, and I have never seen any ill result follow its use. In my experience it is seldom necessary to employ anything more to rid the conjunctiva of excessive secretion; but in a small number of cases in which the secretions have been present for a long time and in which the lacrimal drainage is bad and the conjunctiva soft and macerated, an astringent is required in addition to the treatment described above. In this class of patients topical applications of weak solutions of silver nitrate, zinc sulphate, or the alum crayon should be made once a day to the everted conjunctiva. These will usually produce the desired result. In a few patients it may be necessary, however, to slit the lower canaliculus of each eye in order to effect better drainage.

To remove the trachoma granules with as little destruction and subsequent distortion of the conjunctiva as possible, in my experience no method equals that of expression. It matters not whether they are expressed individually by means of small forceps devised for the purpose (and this is the better plan if they are few in number), or whether they are expressed in groups by some of the larger forceps, such as Knapp's or Claiborne's roller forceps. Personally, I prefer Claiborne's instrument because the spicules on the rollers penetrate each granule, thus permitting the contents to be more easily and more thoroughly expressed. The important point is to express the contents of all the granules, and unless one is careful a few in the retrotarsal folds or at the angles of the eye will be missed. If the trachoma granules are few in number, local anesthesia is sufficient; if, however, they are numerous, a much more efficient operation can be performed with the patient under the influence of a general anesthetic. It is my custom just before expressing the contents of the granules, if they are numerous, to make superficial

scarifications of the conjunctiva, and immediately after the expression to rub into it thoroughly, by means of a pledget of absorbent cotton on the end of a wooden applicator, a solution of mercuric chloride 1 to 500, or a solution of copper sulphate grs. xl to f̄j. If the scarification of the conjunctiva has been extensive, a bichloride ointment is incorporated and cold compresses employed for a couple of days; otherwise only cleansing lotions are necessary.

The subsequent treatment after the subsidence of the acute inflammation produced by the expression consists in topical applications to the everted conjunctiva by the surgeon and in instillations by the patient. The crayon of copper sulphate in those cases that can tolerate it (in my experience comparatively few), solutions of copper sulphate gr. x-lx to f̄j, boroglyceride 30 to 50 per cent, and tannin and glycerin grs. xx-lx to f̄j, are applied at first once a day, and as improvement is noted the time between the applications is lengthened. Sometimes a patient will cease to improve under one of these medicaments, and another must be substituted. The patient may himself instil three or four times a day a drop of glycerin and tannin gr. x to f̄j, or boroglyceride 10 per cent; or sulphate of copper may be employed according to the method of A. E. Prince, of Springfield, Illinois. It is his custom to give to each patient a two-drachm vial of a 10-per-cent solution of sulphate of copper in glycerin with the following directions: "Dilute one drop in twenty drops of water. Use freely in eyes four times a day. Increase strength; make fresh each time." In his experience it is best to commence with one drop of this solution in twenty drops of water and to use it from four to six times a day. The patient is told to decrease the water as he finds he can tolerate the solution, or to increase the water if the solution proves too irritating. Some patients do not tolerate the treatment very well, but in most patients, in his opinion, it is satisfactory and seems to have effected permanent cures.

After repeated trials of the various medicaments that have from time to time been

recommended to be used as topical applications in the treatment of trachoma, I have always been obliged to return to the employment of the remedies just described as those affording the most satisfactory results. Many trachomatous patients, unfortunately, discontinue treatment as soon as the subjective symptoms have been relieved, and for this reason never receive any permanent benefit. It is most important that the treatment be persisted in for a long time if there is any expectation of effecting a cure.

The Roentgen rays have been tried on a few patients, but my experience with them has not been satisfactory. Solutions of jequirity in gradually increasing strengths have not been employed by me personally, but a number of patients under my care who afterward had this method employed by competent surgeons did not seem to me, when after some months they came under my observation again, to be in any better condition than those treated by the methods to which I have referred.

If the disease unfortunately has passed into that stage in which deformity of the lids and accompanying corneal conditions appear, suitable operative measures for the former and local treatment for the latter are of course required. Under these circumstances it may sometimes be necessary to perform canthotomy, canthoplasty, or some one of the various operations for ectropion, in order to relieve the cornea from mechanical pressure, and the treatment for the various corneal complications does not differ materially from the treatment of similar conditions produced by other causes than trachoma.

Personal care and cleanliness to protect others, isolation for those patients unable or unwilling to take all proper precautions, sanitary surroundings and mode of living, the internal administration of suitable reconstructive and supporting tonics, an abundance of fresh air, sunshine, and nutritious food, all have their places as adjuvants in the management of this troublesome affection.

I cannot refrain from here entering my protest against the United States government for excluding all trachomatous indi-

viduals regardless of circumstances. It is generally conceded, I believe, that the disease is contagious through its secretion, and that in the third or cicatricial stage the characteristic secretion has disappeared. If individuals, therefore, affected with trachoma in this stage and fully competent financially to take care of themselves apply for admission into this country, it seems to me to be very unjust that they should be denied admission and be deported. And yet such is the law. In addition to this, who of us can say positively upon eversion of the lids and the most careful examination of a case of non-active cicatricial trachoma, in which not a symptom or condition can be observed except the conjunctival cicatrices of the old inflammation, whether or not he is confronted with a cured case, or a case that may some time in the future give rise to further trouble?

I have observed for many years two patients who in early life were infected with trachoma—one twenty years ago, the other sixteen years ago. Both were treated by competent surgeons, and both recovered without any involvement of the cornea. To the casual observer the eyes are normal. When the lids are everted the cicatrices of the former inflammation are noted everywhere. They are cured cases and simply show the results of the former inflammatory process. There have been no symptoms referable to the lid conditions for years, yet I am sure that any of us examining those conjunctivæ for the first time would suspect that the patients were in a quiescent period of the cicatricial stage of trachoma, and that an examination by our Public Health and Marine Hospital Service would result in similar patients being deported. Until we are able to state positively from a brief inspection whether a given condition of cicatricial conjunctival membrane is a cured case of trachoma or simply a case in the third stage from which more active symptoms may be expected later, the line of exclusion should not be so closely drawn.

Some months ago the following incident came under my observation: About six years ago a native of Syria came to this

country, went to a small town in Ohio, successfully engaged in business, acquired property, and became a naturalized citizen of these United States of America. He sent for his family, consisting of a wife and two children, to join him, but for family reasons the children were left behind with the old folks in Syria when the wife and mother came to this country. Within the past two years these two children, a boy and a girl about ten and twelve years of age, bright, cheerful, and apparently healthy, traveled all the way down the Mediterranean to Marseilles, across France and across the English channel up to Liverpool, thence across the Atlantic to Philadelphia, where they were met by the father and mother, who had come on from Ohio—a trip consuming the better part of two

months—to be ordered deported because on the upper lid of one there were two trachoma granules and on the upper lid of the other three trachoma granules, recently developed, and undoubtedly contracted by infection during the long voyage. The father, a citizen of these United States, was able and willing to obtain for these children competent surgical attention, and aside from sentimental reasons and the hardship of the separation of the children and parents it does not seem to me that it should be mandatory to exclude such cases. The stage of the disease, the financial condition of the patient or the patient's relatives, the prospect of the patient never becoming a public burden, in my opinion should all be considered in interpreting the law.

1831 CHESTNUT STREET.

A PHARMACOLOGICAL STUDY OF CANNABIS AMERICANA (CANNABIS SATIVA).

BY E. M. HOUGHTON, PH.C., M.D.,

Junior Director of the Biological and Research Laboratories of Parke, Davis & Co., Detroit, Mich.;

AND

H. C. HAMILTON, M.S.,

Pharmacological Assistant.

Much has been said and written by physicians and pharmacists relative to the activity of *Cannabis Sativa* (*Cannabis Indica*, *Mexicana* and *Americana*). It is generally believed that the American-grown drug is practically worthless for therapeutic purposes, and that one must employ the true *Cannabis* from India in order to obtain physiologically active preparations. The best quality of Indian drug, it is claimed, is that grown especially for medicinal purposes, and consists of the flowering tops of the unfertilized female plants, care being taken during the growing of the drug to weed out the male plants. This notion, according to our experience, is based largely upon error, as we have found repeatedly that Indian drug which contains large quantities of seed is fully as active as the drug which consists of the flowering tops only, provided the seed is removed before it is percolated, and the experiments are based upon a fluid extract or other pharmaceutical

product obtained from an equal weight of drug minus the seed. The seeds themselves do not contain the active principle, but may make up a very large percentage of the weight of the drug as it appears on the market.

Several years ago we began a systematic investigation of American-grown hemp. Samples from the following localities were obtained and studied:

1. August, 1905, Mr. Gaumnitz, of the Department of Agriculture of the University of Minnesota, sent us samples of hemp grown on the college grounds.

2. 1906. Also supplied by Mr. Gaumnitz.

3. Grown in Mexico, 1903. Sent in for examination.

4. Grown in Mexico, 1904.

5. Grown in Mexico, 1906.

6. Grown in Kentucky, 1905.

7. Grown in Kentucky, 1906.

8. Grown near Detroit, Mich., 1907.

9. Grown in Kentucky, 1907.

From these several samples of *Cannabis Americana* fluid extracts and solid extracts were prepared according to the U. S. P., and were tested upon animals for physiological activity.

The method of assay is that which one of us (Houghton) devised and has employed for the past twelve years. This method consists essentially in the careful observation of the physiological effects produced upon dogs from the internal administration of the preparation of the drug under test. It is necessary in selecting the test animals to pick out those that are easily susceptible to the action of cannabis, since dogs as well as human beings vary considerably in their reaction to the drug. Also, preliminary tests should be made upon the animals before they are finally selected for test purposes, in order that we may know exactly how they behave under given conditions. After the animals have been finally selected and found to respond to the standard test dose, .010 per kilo, they are set aside for this particular work, care being taken to have them well fed, well housed, and in every way kept under the best sanitary conditions. Usually we have found it desirable to keep two or more of the approved animals on hand at all times, so there may not be delay in testing samples as they come in.

In applying the test, the standard dose (in the form of solid extract for convenience) is administered internally in a small capsule. The dog's tongue is drawn forward between the teeth with the left hand and the capsule placed on the back part of the tongue with the right hand. The tongue is then quickly released and the capsule swallowed with ease. In order that the drug may be rapidly absorbed, food should be withheld twenty-four hours before the test and an efficient cathartic given, if needed.

Within a comparatively short time the dog begins to show the characteristic action of the drug. There are three typical effects to be noticed from active extracts on susceptible animals: First a stage of excitability, then a stage of incoördination, followed by a period of drowsiness. The

first of these is so dependent on the characteristics of the dog used that it is of little value for judging the activity of drug, while with only a few exceptions the second, or the stage of incoördination, invariably follows in one to two hours; the dog loses control of its legs and of the muscles supporting its head, so that when nothing occurs to attract its attention its head will droop, its body sway, and, when severely affected, the animal will stagger and fall, the intoxication being peculiarly suggestive and striking.

Experience is necessary on the part of the observer to determine just when the physiological effects of the drug begin to manifest themselves, since there is always, as in the case of many chemical tests, a personal factor to be guarded against. When an active extract is given to a susceptible animal, in the smallest dose that will produce any perceptible effect, one must watch closely for the slightest trace of incoördination, lack of attention, or drowsiness. It is particularly necessary for the animals to be confined in a room where nothing will excite them, since when their attention is drawn to anything of interest the typical effects of the drug may disappear.

The influence of the test dose of the unknown drug is carefully compared with the same dose of the standard preparation administered to another test dog at the same time and under the same conditions.

Finally, when the animals become drowsy, the observations are recorded and the animals are returned to their quarters.

The second day following the two dogs are reversed—i.e., the animal receiving the test dose of the unknown receives the test dose of the known, and *vice versa*—and a second observation made. If one desires to make a very accurate quantitative determination, it is advisable to use not two dogs but four or five, and study the effects of the test dose of the unknown in comparison with the test dose of the known, making several observations on alternate days. If the unknown is below standard activity, the amount should be increased until the effect produced is the same as for the test dose of the standard. If the unknown is above

strength, the test dose is diminished accordingly. From the dose of the unknown selected as producing the same action as the test dose of the standard, the amount of dilution or concentration necessary is determined. The degree of accuracy with which the test is carried out will depend largely upon the experience and care exercised by the observer.

Another point to be noted in the use of dogs for standardizing cannabis is that, although they never appear to lose their susceptibility, the same dogs cannot be used indefinitely for accurate testing. After a time they become so accustomed to the effects of the drug that they refuse to stand on their feet, and so do not show the typical incoördination which is its most characteristic and constant action.

Previous to the adoption of the physiological test over twelve years ago we were often annoyed by complaints of physicians that certain lots of drugs were inert—in fact some hospitals, before accepting their supplies of hemp preparations, asked for samples in order to make rough tests upon their patients before ordering. Since the adoption of the test we have not had a well-authenticated report of inactivity, although many tons of the various preparations of cannabis indica have been tested and supplied for medicinal purposes.

At the beginning of our observations careful search of the literature on the subject was made to determine the toxicity of the hemp. Not a single case of fatal poisoning have we been able to find reported, although often alarming symptoms may occur. A dog weighing 25 pounds received an injection of two ounces of an active U. S. P. fluid extract in the jugular vein with the expectation that it would certainly be sufficient to produce death. To our surprise the animal, after being unconscious for about a day and a half, recovered completely. This dog received not alone the active constituents of the drug, but also the amount of alcohol contained in the fluid extract. Another dog received about 7 grammes of solid extract cannabis, with the same result. We have never been able to give an animal a sufficient quantity of a

U. S. P. or other preparation of the cannabis (*Indica* or *Americana*) to produce death.

There is some variation in the amount of extractive obtained, as would be expected from the varying amount of stems, seeds, etc., in the different samples. Likewise there is a certain amount of variation in the physiological action, but in every case there have been elicited the characteristic symptoms from the administration of .010 gramme per kilo body weight of the extract with properly selected animals.

The repeated tests that we have made convince us that *Cannabis Americana* properly grown and cured is fully as active as the best Indian drug, which we have sometimes found to be practically inert.

Furthermore, we have placed out quantities of fluid extract and solid extract of *Cannabis Americana* in the hands of experienced clinicians, and from eight of these men, who are all large users of the drug, we have received reports which state that they are unable to determine any therapeutic difference between the *Cannabis Americana* and the *Cannabis Indica*. We are of the opinion that *Cannabis Americana* will be found equally as good and perhaps better than that obtained from foreign sources, since proper directions can be given to the grower, so he can take proper precautions to obtain drug of the greatest value. We expect to give this phase of the subject especial attention during the next few years, to see what improvements may be effected.

CONCLUSIONS.

1. The method outlined in the paper, for determining the physiological activity of *Cannabis sativa* by internal administration to especially selected dogs, has been found reliable when the standard dose, .010 gramme per kilo body weight of the unknown, which is reduced to a solid extract, is tested on the same animals in comparison with the same quantity of a standard U. S. P. extract by an experienced observer.

2. *Cannabis sativa*, when grown in various localities of the United States and Mexico, is found to be fully as active as the best imported Indian-grown *Cannabis sativa*, as shown by laboratory and clinical tests.

EDITORIAL.

SOME OF THE ADVANCES OF MODERN MEDICINE.

Medical progress at the present time in some respects resembles a flooded river rushing toward the ocean. As with all streams in the state of flood it carries upon its surface many methods which have been weighed in the balance and found wanting, and which gradually drift to the bank and there decay, but the largest part of the flood is rich with methods and results, the chief of which have been developed within the last few years. An interesting summary of some of these advances and improvements has recently been presented to us by Sir Richard Douglas Powell, of London, in an address which has been reported in the *London Lancet* of November 9, 1907. He points out that since the last Royal Commission on Vivisection in 1876 almost the whole system of therapeutics has been overhauled and much of it submitted to the test of experiment, many new and valuable remedies have been revealed to us, and, furthermore, during this time has occurred the discovery of bacterial agencies as the essential etiological factors in inflammation, suppuration, and in the causation and spread of all specific diseases, while the researches of Pasteur concerning fermentation have not only reaped many millions of riches in commerce but saved untold thousands of lives and many millions of hours of suffering—human and animal.

It is noteworthy that in 1876 no one disease was known to have a bacterial origin, whereas now almost every acute specific disease has its recognized etiological factor in a bacterium or protozoön. It is true that many of our methods for the purpose of combating these infections, when they have developed, have not progressed as far as we could desire. But on the other hand the improvement in the manufacture and preparation of medicines and in the understanding of their physiological activities

has rendered our methods of treatment far more rational than they ever were before, while the introduction of the various anti-toxic sera and more recently the employment of vaccines for the purpose of increasing the opsonic state have accomplished, or promised, much in the way of remedial effect.

We are interested to note in regard to the employment of tuberculin as a therapeutic agent that Sir Richard has seen it employed with advantage in a number of cases, but that he thinks it undesirable to employ tuberculin in the stormy periods of active tissue destruction and severe hectic fever, since these phenomena are mainly due to secondary infections and must first be combated by rest and antiseptic measures.

It must not be forgotten also that within a still more recent period of time our knowledge in regard to infection by protozoa has increased to a remarkable degree, and that with an increase in our knowledge of these forms of infection therapeutic measures for combating them have also been brought forward. Aside from the parasite of malaria we know of the cause of Texas cattle fever, the tsetse fly disease, sleeping sickness, and kala-azar.

Closely associated with these advances we must also take into consideration the extraordinary results which have developed in connection with gastric and gall-bladder surgery and in operative interference upon various conditions of renal disease.

Our increasing knowledge of the minute anatomy of a number of organs enables us to understand their physiological function and the pathological changes which take place in them in a much clearer manner than has hitherto been possible. Sir Richard points out that there are a number of histological facts in connection with the auriculoventricular bundle of His, which transfers impulses from the auricular to the ventricular portions of the heart, well wor-

thy of careful study. As long ago as 1883 Gaskell showed that the contraction wave traveled from the auricle to the ventricle through muscular continuity, and Stanley Kent in 1893 demonstrated in the auriculoventricular septum a definite communication between the auricles and the ventricles, although His actually discovered the auriculoventricular bundle of fibers to which his name has been applied. It is interesting to note in this connection that as long ago as 1845 Perkinjé demonstrated the network of peculiar, gray, flat, gelatinous fibers under the endocardium of the sheep, and found that they consisted of large, nucleated cells in bundles, separated here and there by striated muscular fibers. These so-called fibers of Perkinjé were shown by Kölliker in 1852 to be striated and muscular in nature, while very recently Tawara, a Japanese investigator, has shown that these fibers of Perkinjé are the terminal ramifications of the auriculoventricular bundle of His. The fibers begin immediately below the coronary sinus and emerge above in the auricular musculature. They descend downward as a well-defined bundle which divides above the ventricular septum into two branches, one of which passes down and is distributed to the right ventricle and the papillary muscles, while the other passes through an almost cartilaginous orifice to the left side of the septum to be similarly distributed to the left ventricle. Still more interesting in this connection is the statement of Tawara that the ventricular bundle does not branch until it reaches a point near the tip of the ventricle, where it distributes branches to the papillary muscles and spreads over the whole ventricle from apex to base, so that an impulse starting at the beginning of the fibers in the auricle passes to the apex of the ventricle, and thence is distributed in such a way as to transmit a contractile impulse to the papillary muscles, which control the mitral and tricuspid valves, to be followed a fraction of a second later by the contraction of the ventricle itself. These researches make clear to some extent many cases of cardiac irregularity produced by

disease or drugs, and aid in explaining how it is that certain functional murmurs may be present at one time and absent at another.

It is also interesting in this connection to note the fact that prior to the discovery of the mosquito as the transmitter of malarial infection the minor railway officials in Italy suffered a mortality of about 33 per cent, a mortality which has been abolished by proper protection from mosquitoes, and by destroying the mosquito in yellow fever districts.

Occasionally, however, the progress of civilization aids in the dissemination of disease. It is known, of course, that with the establishment of commercial relations between different districts disease is transferred as is merchandise, but Brunton has recently called attention to the statement of Colonel Bruce, of the British army, that the presence of Great Britain's power in certain parts of Africa has indirectly resulted in almost exterminating certain parts of the native population. Before British intervention the African tribes surrounding Lake Nyanza were continually at war, and it was quite impossible for natives to travel from this district across the continent. As these wars have ceased under civilizing influences, however, commercial relations have been established and sleeping sickness has been carried into a district where before it was unknown.

The interesting experiments which have been made in regard to the activity of fleas in transferring the plague from rats to human beings are another important advance which bids fair to be almost equal to that of the discovery of the transmission of malaria and yellow fever by the mosquito. Interesting experiments have been made by Liston and others, who found that if guinea-pigs were protected from rat fleas they failed to be infected by the bacillus of plague, even if their cages were smeared with the discharges of plague patients; that is to say, if the guinea-pigs were protected by fine wire-gauze cages, or were hung in cages above inoculated rats at such a height above the ground that fleas

could not jump from the rats to the guinea-pigs, these little animals escaped infection, but at once succumbed when no barrier to the passage of the flea was interposed. As rat fleas bite human beings, it is quite evident that by this manner rapid diffusion of the plague may occur; and so the practical lesson is learned that in addition to ordinary methods of sanitation in combating plague we must destroy not only the rats but the fleas that infest them.

THE DIAGNOSIS AND TREATMENT OF INFANTILE SCURVY.

It is a curious fact that with our advancing knowledge of diet and hygiene the dread scourge of long voyages, sailor's scurvy, has passed out of existence and that in its place infantile scurvy has become a fairly prevalent malady on shore. At the same time that the diet of the seaman has been so arranged that these extraordinary nutritional changes do not occur, the diet of the infant has been so changed that its nutrition is seriously impaired. Many years ago a child, if it were so unfortunate as to be deprived of its mother's milk, received in its place the milk of one of the lower animals, but to-day the unfortunate nursling is provided with various artificial foods which possess only some of the qualities which are essential to the maintenance of a healthy existence. Often these children, for a time at least, become plump and apparently well-nourished, but if the so-called "infant food" which has been given them is continued for too long a period without other foods being added to it, scurvy develops. Of equal importance with the recognition that one infant food should never be administered to a child for a long period of time is the recognition of the fact that the symptoms of scurvy are prone to mislead the practitioner into an erroneous diagnosis. In some instances, pain, tenderness, and swelling in the lower extremities, with or without loss of power of the limbs, misleads the physician into a diagnosis of rheumatism, which is certainly a rare disease in very young

children. In other instances, bleeding of the gums, tenderness of the spine, weakness of the back, or the swelling of a single joint leads to an erroneous diagnosis, and we vividly remember one case in which a skillful orthopedic surgeon had condemned a young child to the use of a cumbersome spinal apparatus for the cure of vertebral disease, when scurvy was the real cause of the malady, the child being thought to have spinal disease because it screamed when moved in any way which disturbed its spinal column.

It is also important to remember that it is not only the so-called infant foods which are capable of producing scurvy, for we have seen it develop in children who were receiving sterilized milk without any raw milk, and again, in those children who received milk which had been carelessly heated with the idea of warming it before it was ingested. It is interesting in this connection to note that infantile scurvy is a disease of the children of the well-to-do rather than of the poor, the reason probably being that children of the poor, often through ignorance or carelessness on the part of the parents, receive in addition to the food which is given them by the bottle pieces of fruit or vegetables which they obtain from the table, and at times pieces of meat, it being well known that when once scurvy has developed nothing produces so rapid a cure in any department of medicine as a change of diet and the administration of orange or lemon juice with or without beef juice. Indeed, it is pathetic to see how a child suffering from this disease will, after the first feeding with any one of these articles, reach eagerly for the spoon which contains them the moment they come within the range of its vision.

We would, therefore, remind our readers of the importance of bearing the possible presence of this disease in mind in the treatment of infantile illness. In a recent paper, published by La Fetra in the *American Journal of the Medical Sciences* for June, 1907, he points out that the following diseases are often thought to be present when scurvy is the real cause of the illness:

Rheumatism, acute rickets, arthritis, paralysis from anterior poliomyelitis, syphilitic epiphysitis, sarcoma of the femur, osteomyelitis or deep abscess, purpura in its various forms, nephritis, dysentery, and even intussusception.

THE TREATMENT OF HEMOPTYSIS.

In the editorial columns of the THERAPEUTIC GAZETTE and elsewhere we have repeatedly reiterated our belief that drugs which cause vasoconstriction are of very little if any value in the treatment of pulmonary hemorrhage, first, because the blood-vessels of the pulmonary circulation are but poorly endowed with muscular fibers, and secondly, because as the vessels of the systemic circulation are well endowed with these fibers vasoconstrictor drugs by raising blood-pressure throughout the body actually increase the quantity of blood which goes to the lung.

We have read with considerable interest a communication which has been made to the *Boston Medical and Surgical Journal* of August 15, 1907, by Otis, upon blood-pressure as a guide in the treatment of hemoptysis. He very logically points out that the recommendation of Francis Hare that nitrite of amyl shall be used by inhalation in such cases can only be particularly advantageous in those patients who already have high arterial tension, and many patients with hemoptysis, particularly if the hemorrhage has been free, suffer from a state of the blood-vessels which is quite the opposite of this, although it cannot be denied that since Francis Hare strongly advocated the use of nitrite of amyl a large number of other practitioners have reported good results from its use.

Otis by the use of the sphygmomanometer attempted to determine the blood-pressure in a considerable number of patients. He found in 320 observations upon tuberculous individuals that the average pressure was about 124 millimeters of mercury, which is a little below that of ordinary healthy persons. In 18 cases of hemoptysis the highest pressure was 145 and the lowest was 74, the average being from 109 to 119.

The treatment which he employed in these cases consisted in the local application of ice, and morphine combined with atropine, or heroin, if the hemorrhage was persistent and recurrent. The nitrites, in the form of the nitrite of sodium or nitroglycerin, were employed if the pressure was high.

In regard to the time at which hemoptysis is most prone to occur, he refers to the well-known fact that in the majority of cases it occurs at night or in the early morning hours. In 11 out of his 16 cases this occurred, and he quotes Lawrason Brown as agreeing with Howell's explanation, to wit: that sleep is due to fatigue in the vasoconstrictor center, and that in the early morning hours, when the vasoconstrictor center is regaining its lost tone, variations in blood-pressure result. Brown therefore thinks that morphine and sodium nitrite given between midnight and 2 A.M. may be efficient in preventing hemorrhage.

In an address which the writer of this editorial delivered before the Lehigh Valley Medical Association fourteen years ago, he urged the employment of aconite and chloral in the treatment of these cases, the chloral being particularly of benefit in that it lowers blood-pressure and also acts as a cardiac and nervous sedative. Otis has not employed aconite sufficiently to be able to speak of its power, but he thinks that a laxative dose of sulphate of magnesium in persistent cases is of benefit. We are interested to learn that he has some confidence in the use of ergot, although he knows that he is uttering "a heretical doctrine" in advising it.

CEREBRAL MANIFESTATIONS OF LEAD POISONING.

For a number of years the *Lancet* and *British Medical Journal* have contained reports of cases of acute and subacute poisoning from lead due to the employment of diachylon plaster for the purpose of producing abortion, this method being apparently a popular one amongst the lower classes in England. That lead plaster freely applied is capable of producing such results is rapidly becoming common knowl-

edge, and it will be well if American medical men will bear in mind the fact that certain symptoms due to this cause may mislead them if they are not on the lookout for it.

In a case reported to the *Lancet* of July 13, 1907, Warner describes the case of a woman aged thirty-three years, who received from a friend some diachylon pills with the advice to use six of them a day for several days. This she did, when, after severe exercise, she began to suffer from severe pain in the back and abdomen, to lose blood and finally miscarried. Later the patient was admitted to the London Hospital, having recovered from her miscarriage, but suffering from marked anemia, pain in the back and limbs, with colicky pain in the belly, and fine tremor of the hands. The speech was defective and the memory was deficient. Constipation was marked, and a black line nearly one-fourth inch wide (*sic*) was found on the gums at the base of the teeth. The patient's mental symptoms closely resembled those of delirium tremens. This condition persisted ten days before the mind became clear and natural sleep supplanted that which had been produced by drugs. Under active treatment the dark line on the gums rapidly diminished, and ultimately recovery took place.

The development of symptoms of this character in a patient who gave no history of having taken lead pills might very readily give rise to a grave mistake in diagnosis and in treatment.

THE TUBERCULIN OPHTHALMO-REACTION AS A MEANS OF DIAGNOSIS IN TUBERCULOSIS.

Although the value of tuberculin injections as a diagnostic measure in cases of suspected tuberculosis has been proved frequently, their employment has not as yet become very extensive. The lack of technical simplicity seems to have been an important factor in limiting their use. Any change in technique which brings the tuberculin method within the reach of the

general practitioner will therefore be a welcome addition to our diagnostic armamentarium. The recently suggested ophthalmic method of producing the tuberculin reaction seems to give promise of rendering this test generally applicable. In May, 1907, Wolff-Eisner in the *Berliner klinische Wochenschrift*, 1907, vol. xliv, page 700, announced that by dropping a 10-per-cent tuberculin solution into the eye a marked conjunctivitis was produced in tuberculous subjects, while the non-tuberculous did not show this reaction. Shortly afterward Calmette (*Compt. rendus de séances des l'acad. d. sciences*, No. 24, June, 1907) published the results of his experiments with what he designated as the "ophthalmo-reaction." He used a one-per-cent solution of dried tuberculin that had been precipitated by alcohol, and instilled one drop of this solution into one eye. Numerous investigations and several contributions on the subject have followed this, both in France and Germany, and opinions are, on the whole, favorable as to the probable value of the test.

In formulating a theory as to the tuberculin reaction, it has heretofore been assumed that the tubercle bacilli produce, at the foci of infection, certain metabolic products which unite with the receptors of neighboring cells, and render them especially susceptible to the action of the tubercular toxin—*i.e.*, stimulate them to the production of antibodies. After its subcutaneous injection, the tuberculin in the course of its diffusion through the body is supposed to exert a special stimulating action on these cells surrounding the diseased part, and the reaction of these cells produces the febrile disturbance that is characteristic of the test. Now, the local inflammation following the instillation of tuberculin into the conjunctival sac shows that not only the cells surrounding the tubercular foci, but all of the cells of the body, possess in a tuberculous subject the increased power of forming antibodies, and that the introduction of tubercular toxin in any part of the body will produce a local inflammatory reaction.

In eliciting the ophthalmic reaction a one-per-cent solution of old tuberculin, without

carbolic acid, has been usually employed, one drop of this solution being introduced into the conjunctival sac. To avoid excessive reaction, however, it has been more recently suggested that only a half of one-per-cent solution be used. Schenck and Seiffert employ a three-per-cent boric acid solution in making the dilutions. The reaction usually appears within five to ten hours. Its intensity may be one of three degrees: (1) Simple congestion of the palpebral conjunctiva and caruncle; (2) more intense congestion of the palpebral with injection of the bulbar conjunctiva; (3) congestion and swelling of the lids, marked injection of the bulbar conjunctiva, formation of exudate, with the various subjective symptoms of conjunctivitis well marked. The reaction lasts from two to fourteen days, according to its intensity. In very few cases does the inflammation become so pronounced that therapeutic measures for its relief are demanded, but even here the symptoms rapidly disappear under simple applications to the eye. In the experiments of Schenck and Seiffert (*Münchener medicinische Wochenschrift*, 1907, vol. liv, p. 2269) three different strengths were used; if the one-per-cent solution produced no reaction a two-per-cent was tried, and if this also failed a four-per-cent was used. When two or more applications were made, alternate eyes were used, in order to avoid a possible error arising from a cumulative irritating action of the tuberculin, if such exists.

Investigators have usually grouped their cases into three classes: (1) the positively tuberculous; (2) the suspected tuberculous; and (3) the clinically non-tuberculous. In the class of positively tuberculous cases Schenck and Seiffert obtained an ophthalmic reaction in 100 per cent, but only 78 per cent of these responded to the one-per-cent solution of tuberculin, the rest requiring stronger solutions to produce the reaction. Citron's (*Berliner klinische Wochenschrift*, 1907, vol. xlv, No. 33) percentage of positive cases was 80, and Eppenstein's (*Medicinische Klinik*, 1907, No. 36) was 72. Sillig (*Revue Médicale de la Suisse*

Romande, 1907, vol. xxvii, p. 887) obtained 89 per cent positive reactions in early stages of tuberculosis, and 100 per cent in second-stage cases. Cohn (*Berliner klinische Wochenschrift*, 1907, vol. xlv, p. 1507) obtained the reaction in only 60 out of 86 cases of tuberculosis. He found that most of the negative cases were among those in far-advanced stages of the disease, some being almost moribund; in fact, about one-half of his advanced cases failed to respond to the test, and the other half gave only a very mild reaction. A few of his patients in earlier stages failed to react to the tuberculin, a fact which suggests a possible prognostic feature of the test. Continued observation of such cases may prove this lack of response to be of unfavorable significance.

Exchaquet (*Revue Médicale de la Suisse Romande*, 1907, vol. xxvii, p. 872) has called attention to another phase of the question—i.e., the value of the ophthalmoreaction in determining whether or not a case is cured at certain stages in the course of treatment. According to his experience, a patient in whom all symptoms have disappeared should still be regarded with suspicion, if he gives a positive reaction. Marchard (*ibid.*, p. 878) has applied this principle with success to the articular and osseous tubercular affections of children.

In the second class of cases—i.e., those in which tuberculosis is suspected, but not proved clinically—the results of different observers vary considerably, but this variation naturally depends upon the elasticity of the conception of the term "suspected," which gives the observer great latitude in classification. It is noticeable, however, that the cases of this class, which give a positive reaction, are mostly those which offer the greatest clinical evidence of a tuberculous nature. For example, Schenck and Seiffert's positive cases included cervical lymphadenitis, exudative pleurisy, spondylitis, and cases with slight differences between the two apices.

Greater difficulties are encountered in explaining a positive reaction in those cases in which no clinical evidence of possible

tuberculosis can be found. Schenck and Seiffert obtained a reaction to one- and two-per-cent solutions in 14 out of 52 such cases. Four of the positive cases had articular rheumatism—an interesting fact, in view of the association recently claimed by some clinicians as existing between that disease and tuberculosis. In one of the positive cases tuberculosis was finally demonstrated clinically. Marchard (*ibid.*, p. 878) had only one positive reaction in nine cases of this class. Bourget (*ibid.*, p. 887) obtained the reaction in 31 out of 50 cases which were clinically negative. Two of these positive reactions occurred in typhoid fever and hemiplegia respectively, and at autopsy no trace of a tubercular lesion could be found.

A peculiar susceptibility to the ophthalmoreaction in typhoid fever has been demonstrated by Cohn, who obtained the reaction in eight out of twelve enteric cases. In the course of typhoid fever bacteriolysis of large numbers of bacilli occurs, and a specific sensitiveness is developed toward typhoid bacillus extracts. It may be that this sensitiveness embraces all bacterial proteids, including tuberculin. This is a question that requires further investigation. In fact, all of the experiments are so recent that the value of the ophthalmoreaction can be definitely decided only by watching the further progress of the cases already observed, and comparing autopsy findings with the results of the test during life.

A comparison of the ophthalmoreaction with Koch's method of subcutaneous tubercular injections, made by Cohn in a series of doubtful cases, was quite favorable to the former. In only three cases did the subcutaneous method prove more sensitive than the ophthalmic instillation.

In conclusion mention may be made of experiments performed by Combe (*ibid.*, p. 888) in children. He found that the age of the child materially influenced the occurrence of the tuberculin ophthalmoreaction. Below one year no reaction was obtained, either in tuberculous or non-tuberculous patients. In the second year the reaction was very uncer-

tain in its results, but beyond that age the results were similar to those obtained in adults. No explanation is given for this peculiarity in the behavior of the test.

NERVE SUTURE FOR BRACHIAL PALSY.

A common form of brachial palsy is the so-called Erb's combined paralysis of the shoulder and arm, which involves the deltoid, biceps, brachialis, supinator longus, at times the supinator brevis, the infraspinatus, and the subscapularis. It is generally an expression of trauma incident to pressure of the clavicle, such as results from traction on the arm raised above the head and carried backward, as in the case of the prolonged Trendelenburg position. This form of palsy is a not uncommon expression of a difficult delivery, especially when there has been a breech presentation. Such a palsy is usually unilateral, and the prognosis is not always bad, since the nerve lesion may be simply incident to overstretching, from which recovery may be complete. Where there has been an absolute tear of nerve fibers the outlook for restoration of function is less promising. The extent of the lesion and the powers of restoration can, however, only be determined by the lapse of time. It has been clearly shown that the restoration of muscular power is greatly aided by preventing the useless muscles from being held in a position of tension by the contraction of the antagonistic uninjured muscles. Hence in all such cases splinting is indicated, which will hold the affected muscles in a position of moderate relaxation.

When this treatment, combined with massage, passive motion, and electricity, has proven unavailing after months of fair trial, the only treatment which gives the faintest promise of help is that by operation; having for its end the exposure of the involved nerve trunks, the excision of scar tissue, and the direct union by suture of the comparatively healthy nerve segments.

This procedure, although theoretically promising, is not invariably followed by success, sometimes because there has been difficulty in locating the seat of original injury, often because the latter has been intraspinal. A successful issue of such an operation is therefore worthy of attentive consideration, since it encourages surgeons to at least make a timely effort to prevent what would otherwise result in permanent crippling.

Kilvington (*Intercolonial Medical Journal of Australasia*, vol. xii, No. 8) records the case of a boy six years old, delivered with extreme difficulty head first, immediately after birth exhibiting almost complete brachial palsy, which gradually improved to some extent. When seen by the surgeon the arm involved was much smaller than its fellow, the deltoid, the biceps, and dorsals of the scapula being the muscles particularly affected. The supinators of the forearm were also involved, and the hand was held permanently in the prone position, owing to the contraction of the unaffected pronator muscles. Marked disability was produced by inward rotation of the arm at the shoulder-joint because of paralysis of the external rotators.

Kilvington turned up a flap from the subclavian triangle and found the deep fascia thickened and adherent to the subjacent nerve cords. A distinct bulbous scar was observed in the upper part of the brachial plexus, adherent behind and below to the subclavian artery. As healthy substance could be reached on either side of this, a wedge-shaped piece, going well wide of the scar, was excised. Two thin chromicized catgut sutures brought the cut ends of the plexus together without any difficulty when the arm was raised and approximated to the side. A small, flabby nerve which on stimulation with electrodes caused outward rotation of the humerus was very carefully brought by a separate suture in contact with the freshened central end of the plexus. This was undoubtedly the suprascapular nerve. The dressing was that usually applied to fracture of the clavicle. Massage

and passive movement constituted the after-treatment.

Five months after operation the arm could be raised vertically above the head, the power of the dorsal scapular muscles seemed completely restored, there was no tendency to inward rotation, and almost complete supination was possible. When the patient first began to use the arm there was some incoördination which required a reëducation of the centers.

In regard to the time for operation, Kilvington urgently protests against the prolonged use of postural treatment, having for its end the relaxation of the paralyzed muscles. This he believes has its greatest value after operation.

If in the case of birth palsy recovery occurs after two or three months of conservative treatment it is quite certain that the lesion was a stretching or bruising of nerve fibers. If after this period of time there is no betterment the sooner nerve suture is performed the better, Kilvington holding that it is as reasonable to expect nerve fibers to regenerate through a dense mass of scar tissues by relaxing certain muscles as it is to cause them to do so by standing the child on its head.

CANCER OF THE THYROID GLAND.

Stimulated thereto by the admirable results achieved by Koch, surgeons the world over no longer hesitate to remove thyroid tumors, even when no symptoms other than those incident to deformity are present; still less do they hesitate when patients exhibit either pressure symptoms from the growth of the tumor or the manifestation of systemic intoxication.

In all clinics the results of operation for benign, solid, or cystic growths are most satisfactory, and even in exophthalmos operative procedure promises more than any method of treatment yet suggested, though it unfortunately remains true that the subjects thus afflicted are rarely passed to the surgeon until they have reached their final and fatal stage, the high mortality

then being incident to cardiac degeneration rather than directly to the effect of operation.

The results of the operative treatment for malignant growths of the thyroid show, however, but little improvement in so far as ultimate results are concerned over those of ten or twenty years ago.

It is generally recognized that malignant degeneration usually occurs in thyroids subject to benign struma in the female, and develops between the fortieth and fiftieth year, though it has been observed both in the infant and the aged.

A. E. Halsted (*Surgery, Gynecology, and Obstetrics*, November, 1907) notes that the tumor is usually an alveolar carcinoma which may microscopically be recognized by its grayish-white cut surface and its dry, non-vascular tissue. The adenocarcinoma is found in two forms: in one possessing a low degree of malignancy, the tumor grows in alveolar or tubular processes, the lumen of the tubes being lined with cylindrical epithelial cells, which secrete normal colloid material; the tubular processes often form papillary outshoots and undergo cystic changes. The other exhibits no tendency to papillary or cyst formation and closely simulates benign adenomas and hyperplasia of the normal gland. Even careful histological examination frequently fails to determine the malignancy of any individual specimen. The absence of the tunica propria and invasion of the surrounding structures, and particularly growth into a vein, are evidences of malignancy.

Halsted notes that the suspicion of malignancy should exist in every case when a goitre that has remained stationary in growth for some time suddenly begins to increase in size. If this occurs in a patient over forty and is associated with pain, dyspnea, or dysphagia, or if the growth becomes hard and nodular, the evidence is almost conclusive that a malignant change in the hitherto benign growth has occurred. Paresis or paralysis of the recurrent laryn-

geal nerve is sometimes observed as an early symptom.

Metastases into the cervical lymphatic glands, a usual late complication, are sometimes observed early. They form hard, painful, rapidly growing tumors, and are pathognomonic of cancer. Thrombosis of the veins is a constant and valuable sign; indeed, this at times early suggests the diagnosis. Hahn determined the malignant nature of a goitre by the examination of a portion of a thrombosed cutaneous vein excised under local anesthesia. Halsted notes that when thrombosis of the deeper veins is present, metastasis through the vascular system has already occurred, and the disease is no longer amenable to surgical treatment. It often happens that the diagnosis of cancer can only be made after a microscopic examination of a goitre supposed to be benign. The expectation of life after diagnosis is given as a year and a half. Whilst the growth remains intracapsular it cannot be distinguished from benign goitre by any means of examination other than that of excision and examination. Metastases are commoner in the lungs than in the bones. The glands involved are those above the internal jugular and along the clavicle; later the internal mediastinal glands become infiltrated. Bone metastasis may occur when the carcinoma of the thyroid is still so small as to escape detection. The secondary bone tumors often exhibit pulsation.

Halsted's paper accentuates the need of early operation in practically all cases of goitre. It offers no promise of any betterment in ultimate mortality from operative interference in cases so well developed that a preoperative diagnosis can be made with certainty. It suggests the hope that cancer of the thyroid may become extremely rare with a general adoption of the principle of easy operation upon all thyroid enlargements, since malignant growth is little inclined to develop primarily in a previously healthy gland.

REPORTS ON THERAPEUTIC PROGRESS.

VALVULAR DISEASE OF THE HEART.

In the *Practitioner* for June, 1907, CRAWFURD tells us that in the direct treatment of tricuspid regurgitation we have, as in mitral regurgitation, two main lines of action, viz., to diminish the resistance in the vessels and to increase the power of the heart. Rest is the first and most essential agent, and alone will often suffice to restore equilibrium; rest should at first be complete and in bed, and should be relaxed only as improvement becomes marked. The most valuable auxiliary of rest is digitalis, which beyond all question acts as powerfully on the right ventricle as on the left. In grave cases it should be given with the usual precautions, viz., after a free initial purge to unload the veins, and combined with more rapidly-acting stimulants, such as strychnine, ammonia, or ether, to tide over the delay of its effective doses. Calomel is probably the best purgative to employ, as it seems to be diuretic in conditions of cardiac back-pressure. Digitalis should be given at first in small and gradually increasing doses, so as to give the pulmonary circulation time to readjust itself to the increased driving power of the right ventricle; not a few instances of hemoptysis have resulted from disregard of this condition. It is remarkable, as a rule, how, with rest and digitalis, in a few days the circulation is steadied, free diuresis set up, and dropsy begins to disappear. At the same time the murmur and systolic venous pulse may vanish. At times diuresis fails, or is inadequate; then theobromine or caffeine may be given with salicylate of soda. When the whole body, and perhaps the serous sacs as well, is dropsical, these measures are all apt to be quite ineffectual, until such effusion has been relieved or removed; then paracentesis of the abdomen or thorax, or puncture or incision of the feet and legs, may be a necessary prelude to the success of digitalis. Such relief is usually followed by a rapid increase in the output of the urine,

and by a return of restful and comfortable sleep.

There are yet other cases, commonly those in which dropsy is not a prominent feature, and in which the strain on the right heart is so great as to render the patient livid and on the verge of suffocation; then early venesection, followed by diffusible stimulants, such as ammonia and ether, offers the best chance. Acute distress of this kind in tricuspid regurgitation is nearly always attended by two dangerous auxiliaries, sleeplessness and vomiting, directly due, in each case, to venous stagnation. Sleep must be obtained, and at times at any price. The author states he has seen the end, in one or two cases, accelerated by morphine, but far more often by the fear of morphine. He is sure that in conditions of urgent cardiac distress, with restlessness and insomnia, we are far too fearful of morphine, and patients are allowed to die of sheer exhaustion for want of sleep. It is the author's idea that it may be given most safely in the form of suppository, but if given subcutaneously it may be advantageously combined with strychnine. It is useless to give morphine, if we have not the courage to give an efficient dose. It is idle, in advanced cardiac cases, to put one's trust in hypnotics other than morphine; the habitual sequel is a night of disturbed delirium, followed by a day of tantalizing drowsiness. Trional, sulphonal, and paraldehyde are most commonly employed, because, forsooth! they do not depress the heart. Paraldehyde has the added horror of a clinging and nauseous after-taste, and may excite persistent vomiting.

Vomiting is another grave danger, and is directly due to venous stagnation in the stomach. At times even the smallest amount of fluid food is at once rejected. In such a state it is worse than useless to attempt feeding by the stomach. The obvious indication is, without delay, to unload the

portal circulation. Any bulky saline draught will be immediately rejected by the stomach, and a full dose of calomel, with an equal quantity of bicarbonate of soda, mixed in a dessertspoonful of milk, is most likely to be retained; this will often prepare the stomach to tolerate small amounts of peptonized milk. Rectal feeding is probably useless, as the condition calls for urgent and immediate relief.

It is in this same class of cases, in which general anasarca is not a prominent feature, that the enlarged liver is apt to cause a great deal of discomfort and even pain. Free leeching over the liver, with a brisk purge, may afford some measure of relief.

LOCAL ANESTHESIA IN THE EXTRACTION OF TEETH.

The correspondence which appeared recently in the *British Medical Journal* on the subject of the use of cocaine in the extraction of teeth will serve a useful purpose if it directs the attention of the profession to this subject, the importance of which is not sufficiently realized. At present the very phrase "painless extraction" is little more than a byword, and a large proportion both of the public and the profession have the idea that dentists who use cocaine before extraction use it merely as a placebo, as something to give confidence to the patient, and assuage his terror before inflicting the inevitable torture. There are those, in fact, who place the method of local anesthesia on a level with the brass band which drowned the shrieks of the victims of the "painless dentistry" of the operator at a fair. It follows that we rely almost entirely on general anesthesia, nitrous oxide being administered in the vast majority of cases. It is admitted that this anesthetic is both safe and convenient, but its duration is too short for the extraction of more than a few teeth, especially when there is any difficulty attending the operation. It is under these circumstances that the medical man is called in, and is presented with the choice between chloroform, which is notoriously dangerous in dental work, and ether, whose inconveni-

ences are apt to appear out of proportion to the comparative triviality of the operation.

It is impossible to read Dr. Sauvez's book, "*L'Anesthésie Locale pour l'extraction des Dents*," without coming to the conclusion that much of the skepticism which exists in this country as to the anesthetic value of cocaine in tooth extraction is due to a haphazard and in fact faulty method of applying it. After a very careful analysis of the advantages and disadvantages, the dangers and comparative efficacy of the two methods, Dr. Sauvez declares definitely in favor of local anesthesia in all but a few exceptional cases; and of the various methods of producing local anesthesia, injection of the gum with cocaine is almost always the best, though he thinks it likely that cocaine will be largely superseded by the newer drug, stovaine, owing to the slighter toxicity of the latter body.

It is sometimes argued that cocainization cannot abolish the pain of extraction, because while anesthetizing the gum it leaves untouched the nerve which supplies the tooth itself, and it is assumed that the drag on this nerve and its final rupture is a principal cause of the pain. This last assumption is altogether denied by Dr. Sauvez, and he claims to have disproved it in an earlier work. In support of his contention he quotes the following significant fact, namely, that where the pulp of the tooth is exposed and the gum is properly anesthetized, the touch of a probe on the pulp still produces intense pain, but extraction of the tooth is nevertheless perfectly painless. This fact, which Dr. Sauvez claims to have amply verified, would seem sufficient of itself to prove his contention that the real cause of the pain is the rupture of the "alveolo-dental ligament." Dr. Sauvez's account of the fibrous and membranous relations of the tooth is not perfectly clear, but what he describes as a ligament evidently consists of certain fibers from the membrane familiar to English readers as the periodontium. But even if we regard his differentiation of these fibers as somewhat fanciful, his argument is not thereby affected. "The object of local anesthesia for the extraction of teeth," he

says, "is solely anesthesia of the alveolo-dental ligament." The important point of the book is Dr. Sauvez's account of the technique by which he achieves this object, and that account is admirably clear and convincing. If for "alveolo-dental ligament" we choose to substitute "periodontium," it makes no difference. To achieve the above object the needle should be entered obliquely at a point midway between the free border of the gum and the level at which the point of the fang is assumed to lie, or, according to Loup, slightly nearer the neck of the tooth.

It is of the utmost importance that the point of the needle should not penetrate quite through the mucous membrane, or, as Dr. Sauvez says, the injection should be "intradermic" rather than "hypodermic." The point of the needle is carefully advanced as the fluid is very slowly pressed out. If the needle has been entered aright there will be considerable resistance to the expression of the fluid, and the injection will be followed by blanching of the gum. If there is no resistance it is because the needle has penetrated into the loose submucous tissue, or is too close to the epithelium, which it raises in a bulla. In either of these cases the anesthesia will be unsatisfactory. The aim of the operator should be to surround the tooth with a zone of anesthesia, and for this purpose at least two punctures are necessary. When there are no other teeth in contact with the one to be extracted four punctures may be made with advantage. If the fluid is expressed slowly enough anesthesia will be established as soon as the last injection is complete. In all ordinary cases $1/6$ of a grain of cocaine hydrochlorate dissolved in 15 minims of water (that is, one per cent approximately) will be sufficient, but in more difficult cases Dr. Sauvez has used as much as $1/2$ of a grain without mishap, and in these cases it is most important that the recumbent position should be maintained both during and after the operation. In order to overcome the resistance which ought to be met with it is important that the syringe should have a wide thumb-piece on the end of the piston, and

two wings attached to the barrel to afford a purchase for the first and second fingers; the needles should be screwed on to the syringe with a rubber washer to prevent any escape of fluid at the joint. The best results are obtained with the one-per-cent solution of cocaine combined with five per cent of adrenalin chloride; and Dr. Sauvez also speaks highly of stovaine, which is less toxic than cocaine. But the danger of syncope and other accidents arising from the use of cocaine he shows to be due in most cases to ignorance or carelessness in the method of administering it; and he emphasizes the fact that the same amount of the drug is more dangerous in a concentrated solution than in a weaker one.—*British Medical Journal*, April 13, 1907.

BUTTERMILK FEEDING.

To the *Journal of the American Medical Association* of May 11, 1907, CARPENTER contributes a paper on this topic. The twelve infants reported upon varied in age from one month to fifteen months. The average gain in weight of the five babies treated in the Philadelphia Hospital was $7\frac{1}{2}$ ounces a week. The average gain in weight of the seven babies treated at the dispensary was $8\frac{3}{4}$ ounces a week.

The average gain in weight of the entire twelve infants fed on buttermilk was 8 ounces a week.

This gain in weight is particularly of interest for the reason that every one of these twelve cases was seriously ill at the time it was put on buttermilk. The author calls special attention to the five babies in an infant asylum, whose average gain was $7\frac{1}{2}$ ounces a week.

Carpenter concludes that one advantage of buttermilk in dispensary practice is its inexpensiveness, costing in Philadelphia only 5 cents a quart.

The author believes fresh buttermilk a most excellent temporary food for infants suffering from intestinal indigestion, enteritis, and marasmus.

He has observed no unpleasant effects

from the administration of fresh buttermilk; infants almost invariably take it well.

A few of these infants, when first put on buttermilk, vomited slightly; but in every case this ceased in a day or two, with one exception.

Finally, the point the author wishes to emphasize from his brief experience is, whatever success has attended the use of buttermilk is not so much due to the absence of fat as to the great ease with which the proteid of buttermilk is digested. He has had the opportunity to observe this in almost every one of his cases. Several who were unable to digest 0.75 per cent of calcium casein digested perfectly the 2 to 3 per cent of casein lactate in the buttermilk.

INDICATIONS FOR THE EMPLOYMENT OF ADRENALIN CHLORIDE IN CONJUNCTION WITH CO- CAINE, IN OPERATIONS ON THE EYE.

THEOBALD in the *Journal of the American Medical Association* of July 27, 1907, states that for several years, as a matter of routine, he has been employing adrenalin chloride in conjunction with cocaine in many operations on the eye. At first this was done solely to lessen hemorrhage, but for some time he has used it not only for this purpose, but because it soon became evident that through its action the anesthetic effect of the cocaine was definitely increased.

In operations on the cornea and conjunctiva the anesthesia produced by cocaine is, as a rule, so complete as to leave little to be desired, but this cannot be said of certain other operations, notably those on the ocular muscles, on the lacrimal apparatus, and those done for the cure of chalazion or other tarsal cysts. Here, where much is to be desired in the direction of more perfect anesthesia, adrenalin has proved of undoubted value.

That adrenalin used in conjunction with cocaine facilitates, in a mechanical sense, the passage of probes through the occluded lacrimal duct has not been evident to the author, but that it renders the introduction

of the probes, as well as the slitting of the canaliculus, less painful is hardly open to question. There can be as little question that chalazion operations in like manner are made much more tolerable than are those in which cocaine only is used.

In tenotomies of the ocular muscles the hemostatic action of adrenalin is of great advantage, though it must be confessed that it does not always as effectually control hemorrhage from the divided tendon as it does from the conjunctival incision. In addition to this effect, however, the writer is sure that it makes the operation—especially the cutting of the tendon and the manipulations with the strabismus hook—decidedly less of a tax upon the fortitude of the patient.

In operations involving the making of a corneal section, especially cataract extractions and iridectomies, with the exception of iridectomy done during an attack of inflammatory glaucoma, the experience of the author has taught him to be rather chary in using adrenalin. For, though he has employed it several times in cataract extraction with no ill effect, he has felt more than once that the operation was complicated by its use. Particularly was this true of one case in which, immediately after the completion of the section, the cornea lost its transparency to a remarkable degree and collapsed in crater-like fashion, the further steps of the operation thereby being rendered decidedly more difficult. In such operations, too, there seem to be no definite reasons for employing adrenalin, since the anesthesia from cocaine alone is usually satisfactory. This last observation does not apply, however, to iridectomies performed for the control of inflammatory glaucoma. Here, as is well known, the anesthesia from cocaine is often far from satisfactory. For this reason, and because, moreover, the astringent effect of adrenalin is decidedly helpful, the author has preferred to use it under such circumstances. It is interesting to note that Professor Fuchs, of Vienna, has been led by his experience to a similar conclusion.

In operations for pterygium, adrenalin

seems to the author to be contraindicated, because its blanching effect renders the outlines of the growth difficult of recognition, and, besides, the anesthesia from cocaine alone is all that could be wished for.

Dr. J. Elliott Colburn has pointed out another valuable indication for the use of adrenalin in conjunction with cocaine. In several cases of ocular traumatism the instillation of adrenalin by checking hemorrhage greatly facilitated the detection and removal of foreign bodies which were embedded in the superficial structures of the eye.

Although the author has usually employed adrenalin in full strength (1:1000 solution), and, especially in probing the lacrimal duct, has applied it to the same eye repeatedly and freely, he has never seen any untoward consequences, except such as he has referred to, from its action. He has also found that its sterilization, by brief boiling in a Florence flask, in nowise impairs its efficiency.

There seems to be good authority for the claim that the toxicity of cocaine is markedly lessened through the action of adrenalin, but in eye surgery this is not a matter with which we are much concerned.

THE ACTION OF THE EXTRACT OF THE SUPRARENAL GLAND AND THE METHOD AND INDICATIONS FOR ITS USE.

In the *Journal of the American Medical Association* of May 18, 1907, MILLER considers the value of this drug in hemorrhage from vessels not accessible to local applications, as in the lung or intestinal tract. Adrenalin may check hemorrhage not only through its constrictive action but also by increasing the coagulability of the blood. The latter action can be readily demonstrated after intravenous injection. At first thought it would appear that we have here an ideal hemostatic. Its constrictive action, however, is more than counterbalanced by the sudden increase in pressure. In rabbits the author observed that in a wound the vessels that have stopped oozing often start bleeding

after an intravenous injection of adrenalin. It is also not an infrequent occurrence to have a cannula forced out of the carotid immediately following the use of an intravenous injection. In pulmonary hemorrhage there is the additional danger of possible absence of vasoconstriction by having a condition of dilated vessel with increased pressure. Its action in stopping hemorrhage by increasing the coagulability of the blood may be more safely and effectually induced by calcium chloride or gelatin, neither of which increases blood-pressure. The use of adrenalin in controlling distant hemorrhage should be discouraged, as it probably does harm, as may any substance that increases blood-pressure. This has led Smith, Hare, Lemoyez, and others to advocate vasodilators in controlling distant hemorrhage.

The use of adrenalin by subcutaneous injection in controlling asthmatic attacks is of recent date, although applied to the nasal mucous membrane it has been employed for this purpose for several years. Kaplan has reported very favorably of its action in relieving the asthmatic attack. The dosage is from 5 to 15 minims of the 1:1000 solution subcutaneously or intravenously. During the past year the author has used adrenalin in eight cases of bronchial asthma with very satisfactory results. In all these cases marked relief appeared in two or three minutes and continued for three hours. Some of these cases were of long standing and the patients had employed all the ordinary remedies, but according to their statements none afforded such prompt and complete relief as adrenalin. From tests with other substances he is quite convinced that the results are due to the specific effect of the drug and not to any suggestive action. In none of his cases could he observe any curative effect; the attack occurred at the usual interval and with the same intensity. One patient during a period of eight months received 100 injections, always with relief, no increase in the dose being necessary. In none of the cases could he observe any untoward results. J. A. Capps, however, in personal communications, reports serious cardiac disturbance in an elderly person

immediately after an injection for asthma, and its use here should be restricted to patients with good heart and blood-vessels. The action of this drug on asthma may throw some light on the nature of the pathological process. It is difficult to conceive how adrenalin can relieve a bronchial spasm; one can more readily see how a hyperemia of the bronchial membrane could disappear under its vasoconstrictor action.

THE HYPODERMIC USE OF QUININE.

In an article on this subject in the *Indian Medical Gazette* for May, 1907, SYMONS fully indorses the efficiency of administering quinine "with the needle." Since his connection with the General Hospital at Madras, as fourth physician, some four years since, he has always given quinine by this method, and has only seen one bad result, in the shape of a superficial abscess. The salt used is the acid hydrochloride of quinine, which will dissolve in equal parts of distilled water. This solution is made up in the dispensary of the hospital, in an ounce bottle, and used when required.

The technique is as follows:

1. A small hypodermic syringe is used, the needle of which is sterilized by boiling for two to three minutes in a test-tube. The syringe is washed out with 1-in-20 carbolic lotion by means of drawing up some of the solution into the syringe three or four times. A small spoon is also placed in the 1-in-20 carbolic lotion, and is used to receive the quinine lotion when it is poured out from the bottle previous to changing the syringe. The glass stopper together with the neck and mouth of the bottle are thoroughly cleaned with a sponge dipped in 1 in 20, and the parts into which the solution is to be injected is, of course, prepared in the usual way. The author considers all the above details absolutely essential, especially the cleansing of the bottle—a point likely to be forgotten.

The dose is 10 minims, equal to 10 grains of the salt, intramuscularly in the deltoid muscle. If it be given hypodermically, trouble in the shape of a superficial abscess

may arise—never, however, when introduced into the muscle. As to tetanus, such a disease should never deter one from intramuscular injections if the above precautions are taken. The author asserts he has been injected in the deltoid on many occasions about 10 A.M., and has played polo the same evening, which speaks for itself as regards local after-effects.

Sometimes a slight aching sensation occurs whilst the solution is being injected, but it passes off immediately.

In the author's opinion there is no comparison in the two methods—i.e., by injection and mouth. By the former method we make absolutely sure of the patient receiving the dose of quinine which is administered, and we do not derange the digestive organs. The patient comes quickly under the influence of the drug—a very important factor in "malignant" cases. The temperature comes to normal in twenty-four to thirty hours and stays there. In his wards the usual practice is to inject on three successive days and then on alternate days for the week to make sure of the patient being quinized.

The author has never observed symptoms of cinchonism from this method. He adds that all the cases are diagnosed by the finding of the plasmodium malarie before the quinine is given, even if it means the patient remaining a few days in the wards before he receives any specific treatment.

TREATMENT OF THE ANEMIAS.

G. SITTMANN (*Deutsche medicinische Wochenschrift*, Dec. 27, 1906) deals with the manifestations of the various forms of anemia and with the best forms of treatment. All anemic conditions have one factor in common—that is, a diminution of the total quantity of blood. This is most marked in acute and chronic posthemorrhage anemia. In this form, and also in progressive pernicious forms, it is necessary to make good this diminution in quantity. Transfusion of foreign blood (that is, animal) has long been discarded, since the dangers attendant are very great. Trans-

fusion of human blood does not offer any great difficulty or danger if one succeeds in carrying it out properly and in preventing coagulation. Ziemssen's method is to extract blood from the vein of a healthy person into a sterile syringe having a capacity of 25 cubic centimeters, and slowly injecting it into an arm vein of the anemic person. The syringe is then washed out with sterile warm saline fluid, and the process is repeated. The needle is connected to the syringe by means of a short rubber tube, so that there is room for movement of the needle on the syringe and less chance of wounding the inside of the vein. Three syringes are required: one is being cleaned out while the second is being filled and the third is being emptied. This method has yielded good results in oligemia after acute bleeding, in anemia after prolonged chronic bleeding, but in chlorosis and pernicious anemia it is of less avail, and it is quite useless in leukemia.

The injection of defibrinated human blood is too dangerous to be employed. Next, one can inject sterile physiological saline fluid subcutaneously. This method not only increases the amount of circulating fluid, but inasmuch as it washes out of the hematopoietic organs the reserve stock of red blood cells it supplies a certain increase of the oxygen carriers. One can get from $1\frac{1}{2}$ to 2 liters of fluid to be taken up in an hour by applying a large glass irrigator and allowing the fluid to run in continuously, while massage is applied to the site of injection.

With regard to the replacing of the lost hemoglobin he finds that iron in some form is the sovereign remedy. In all the diseases of the blood attended with diminution of the amount of hemoglobin iron should be employed. After hemorrhage the total quantity of hemoglobin is diminished; in chlorosis the quantity of hemoglobin is more diminished than is represented by the decrease in the number of red cells; while in pernicious anemia the loss is less as far as hemoglobin is concerned than as far as cells are concerned. In leukemia the hemoglobin diminution corresponds to the diminution

in the number of red cells. Only in the cachectic stages of pernicious anemia does iron do harm. Iron therapy is of greatest value in diseases which depend most on the diminution of hemoglobin, and it is therefore most useful in chlorosis. It is of less value in secondary anemia or in essential anemia.

With regard to the form of iron the author states that much difference of opinion exists as to the best combinations. It has been shown that both organic and inorganic combinations of iron are absorbed from the intestines. Sittmann considers that all the elaborate organic preparations of iron are unnecessary, and that excellent results are obtained by means of the old-fashioned Blaud pills or the solution of the albuminate of iron. It is, however, of great importance to give iron in such a form and way that the digestion is not disturbed, and that the nutrition is not interfered with during medication. He believes that the iron is less responsible for gastric symptoms than is the alcoholic content of many of the preparations. He does not approve of increasing doses of pills or other forms of iron, but gives large doses from the first, and has never seen them do any harm.

Arsenic has a distinct influence on the blood-forming organs. It is said to act by stimulating these organs, and thus indirectly producing a larger manufacture of blood cells. Fowler's solution, either combined with iron or without, is of use in the pernicious form. It is too painful to be employed in subcutaneous injections, but the sodium arsenate can be given in this way. For prolonged medication subcutaneous injections are to be preferred. Sodium cacodylate may be given by mouth or hypodermically, and arsenic-containing mineral waters also offer a means of employing this element.

After saying a few words on the x-ray treatment of leukemia, which he thinks does considerable good, although it cannot be said to cure the disease, the author passes on to the dietetic and nursing treatment of anemias. Overfeeding, or at least very plentiful feeding with easily assimilated

forms of food, does much good. The best results are obtained when one can keep the patient in bed, but this is often very difficult to carry out. The hemoglobin amount improves steadily as long as the person is lying, and he should not be allowed to get up until the blood has shown a very marked improvement. Alcohol should be avoided in all forms of anemia, while coffee and tea should only be given in small quantities as taste correctives.—*British Medical Journal*, April 13, 1907.

BREAKFAST FOODS.

Prof. Robert Harcourt has contributed to the *Journal of the Society of Chemical Industry* of March 30 a valuable paper on the chemical composition, digestibility, and cost of several wheaten and oaten products that have been placed on the market under the names "breakfast cereals" and "breakfast foods." According to the claims made for some of these foods they are not only perfect foods in a condensed form, but they are also brain tonics and possess a variety of wonderful virtues. Professor Harcourt ruthlessly looks below the surface of mere newspaper "puffs" and shows by a series of analyses how little these extravagant claims find justification in fact. The various breakfast foods may be roughly divided into four classes: (1) The old forms of uncooked granulated oatmeal and the wheat farinas. Foods of this class are served after cooking either for a short time or for several hours. (2) Partially cooked rolled and flaked grains. In manufacturing these foods the grain is softened by steaming and then rolled and dried. In this way the food is slightly cooked and may be subsequently prepared for the table in a very short time. (3) Cooked foods—*e.g.*, shredded wheat, which may be served at once without further cooking. (4) Malted foods—*e.g.*, Force and Grape Nuts, which are supposed to be both cooked and partially digested.

Professor Harcourt examined the following breakfast foods: Granulated and rolled oats, Quaker Oats, wheat farina, wheat germ, and rolled wheat, flaked barley, corn-

meal, Orange Meat, Force, Norka, Malta Vita, Grape Nuts, Canada Flakes, shredded wheat, and rice flakes. Of these, the oatmeals and Norka, an oaten product, contain the most proteins and fat, while all the other foods are richer in carbohydrates. From a consideration of the data set forth in the paper and of the number of heat calories these foods produce when burned, the conclusion is drawn that the oaten products have the highest nutritive value.

The much-advertised prepared breakfast foods have only a very slight advantage over the ordinary wheaten farinas. Experiments were made to determine the digestibility of these different foods by ascertaining the quantity of protein, fat, and carbohydrates in the food eaten and in the feces, the differences being regarded as the amount digested. Healthy young men were taken as subjects, and each experiment extended over a period of four days. According to these results the wheat germ is more fully digested and absorbed than any of the other foods. The protein of all the foods examined is less completely assimilated than the other constituents. This is particularly true in the case of Force. It is also noteworthy that the carbohydrates of Orange Meat, Force, and Norka are not so fully assimilated as those of the other foods. The results, as a whole, indicate that the expensive prepared breakfast foods are not more completely digested and assimilated than the wheaten farinas and rolled oats, or even than the old forms of granulated oatmeal.

Calculations were then made as to the food value of the digestible matter obtained from a given money value of each of the foods examined. It was found that cornmeal is the most economical of these foods, the oatmeals take second place, and the wheat germ occupies the third place. Oatmeal and wheaten farina in packages are twice as expensive as in bulk. The predigested foods are very much more expensive; thus, Force costs more than four times as much as granulated oats.

Experiments were made to determine the influence of cooking on the solubility of

these various foods. Rolled oats and wheaten farina were cooked for different lengths of time, when it was found that the wheatmeals are more readily rendered soluble by heat than the oatmeals. Thus, after twenty minutes' boiling the aqueous extract of wheaten farinas contained 27.4 per cent of soluble matter, while the extract of the oatmeals contained only 14.95 per cent. Rolled oats and wheaten farina were then boiled for different lengths of time, from twenty minutes to eight hours, and the products were eaten by different subjects in order to determine the digestibility of the foods so treated. The results showed that the length of time during which the food is cooked does not very materially influence the percentage amount assimilated. It is possible that less energy may have been expended in digesting the foods that were cooked for the longer times, but no figures could be procured on this point.

From all the data presented it is evident that corn-meal, rolled oats, and the farinas, especially if bought in bulk, are the most economical breakfast foods. It is, however, true that these foods do not agree with every one, and that the predigested foods may be useful for those people who have difficulty in digesting starch. But the intelligent housewife who needs to consider economy will do well to continue to use the old form of breakfast foods, except in individual cases in which the difficulty is found in digesting them.—*Lancet*, May 4, 1907.

HOME TREATMENT OF EARLY TUBERCULOSIS.

KEATING states in the *Medical Record* of July 20, 1907, that as the successful treatment of pulmonary tuberculosis depends upon the observance of certain rules of living that are apt to be in such marked variance with the daily habits of most of the patients, the difficulty of effecting a cure is apparent.

The progress of the disease being slow and the disability in even rather well-advanced cases not being pronounced, the patients are unable to appreciate the neces-

sity of instituting prompt and effective measures for their relief.

The frequent relapses, the months and sometimes years of patient effort required to establish freedom from objective and subjective symptoms, are discouraging to both patient and physician. All patients suffering from pulmonary tuberculosis should begin treatment by rest in bed, for at least six weeks. This initial rest should be taken under conditions that are as near an approach to out-of-doors as it is possible to obtain.

The family as well as the patient should understand that the six weeks' rest will not cure the disease; that its object is to check its progress and give the patient an impetus toward recovery.

It should be made clear that the road to recovery is not likely to be an uninterrupted one, but that occasional periods of one or two weeks in bed are to be expected. If constipation exists it should be relieved at once. Magnesium sulphate in daily teaspoonful doses acts very nicely, and may be continued for two or three weeks. If the patient suffers from nausea or vomiting, relief is most quickly obtained by administering a high enema, consisting of glycerin half an ounce, magnesium sulphate half to one ounce, water one quart.

It is surprising to see how promptly nausea, vomiting, and gastric pains disappear under a liberal diet, when the patient is put to bed, and free movement of the bowels is established. For continuous use, when a laxative is needed, fluid extract of cascara sagrada, in five- to ten-minim doses three times a day, is one of the best and most satisfactory drugs.

For the associated bronchitis, guaiacal carbonate, in five-grain doses four times a day, is of value. The author has seen some patients improve nicely who received ichthyol in thirty-grain doses three times a day, while in other cases it has seemed to have no effect.

The two drugs that have given him the best results in all cases are arsenic and tincture of nux vomica. They may be given singly or combined: arsenic in the form of

Fowler's solution in three-drop doses, and tincture of nux vomica in five-drop doses at meal-time.

While he believes that serum therapy, combined with better hygienic conditions, will in the future be to tuberculosis what vaccination is to smallpox, he feels that with the present knowledge of tuberculin it would be better to confine its use to sanatoriums, where the risk of its administration can be reduced to a minimum, and the reaction carefully observed.

However, as many competent men are using it in general practice and believe in its value, he does not think its use should be entirely condemned or thought unsafe in the hands of the general practitioner. In the matter of feeding it should be kept prominently in mind that, with the patient in bed, the stomach will care for an amount of food which, if taken with the patient going about, would prove disastrous. The diet should consist of three liberal, properly prepared meals a day. In addition the patient should drink one to two quarts of mixed milk and cream, and take from three to a dozen raw eggs during the twenty-four hours. The patient should be instructed to drink the milk slowly. Three or four drachms of lime-water may be added to the daily supply.

Sleep can often be obtained for those patients who suffer from insomnia by having them take an egg or two and a glass of milk at midnight, or later, if awake. The egg should be broken into a cup, sprinkled with salt, and swallowed. Patients should not be permitted to render the eggs more palatable by the addition of nutmeg, sugar, vinegar, wine, or whisky, as such measures are almost certain to create a disgust for the eggs, while if prepared as above indicated, the most sensitive patients take them willingly.

In cases that are not past the curative stage, cough subsides under the influence of rest and care, without resort to sedatives. Mixtures that increase bronchial secretions are pernicious.

When profuse hemorrhage occurs, morphine should be administered hypodermi-

cally. The author does not believe that any other drug has any influence in preventing pulmonary hemorrhage. Among the poor the trained workers of the Visiting Nurses' Association render valuable service to the patient and accomplish a great deal by keeping the other members of the family persevering in their efforts to prevent spread of the infection.

When the patients are out of bed they should be taught to eat slowly and practice deliberation in all physical movements, as such deliberateness tends to conserve nervous energy and favor the accumulation of fat. Success in the treatment of pulmonary tuberculosis depends upon the enthusiasm of the physician and his ability to prevent his patients from becoming lax in their efforts to maintain their physical condition at its highest possible standard.

GASTROPTOSIS AND ITS TREATMENT.

In the *Medical Record* of July 20, 1907, Lockwood in speaking of the treatment of this condition states that the more strict the seclusion the better the result. Do not be cajoled into the error of admitting oversympathetic mothers and indiscreet friends into the sick-room.

The hot bath and spinal douche consists in immersion (temperature 105°) for five minutes, followed by a cold spinal douche for ten seconds. The hot applications must be moist, and may be applied either by hot flannels, spongiopiline, or a moist flannel covered with an electric pad. The whole application is to be tightly applied by an abdominal binder; such applications to be changed every two hours in the day and once in the night.

The diet is conducted on about these lines: For breakfast—Cocoa; cereal with cream and sugar; minced meat on toast, or soft-boiled eggs, rolls, butter, marmalade. 11 o'clock—Russell's emulsion. 1 o'clock—Fish or chicken, or bird; two vegetables; a farinaceous dessert (corn-starch, farina, or rice pudding). 4 o'clock—Either the remains of the farinaceous pudding, or junket, or malted milk. 7 o'clock—Like the meal

of 1 o'clock. 9 o'clock—The meal like the 4 o'clock.

Throughout the day cream (16 per cent) is to be given; and the author is not afraid of giving these patients two or three caramels after each meal, as he thinks it helps the bowels. Liquids at meals are to be restricted. No fruit or red meats are to be allowed.

If the bowels are constipated, the nurse is directed to massage the descending colon ten minutes three times a day, and to use intestinal irrigations by a to-and-fro current, not introducing more than a pint at a time, just as one would wash the stomach. The custom of giving two or three quarts of water at a time is to be deplored.

As regards medicine, it is best to start with small doses of bromide, a drug indispensable in the treatment of these cases. The author frequently employs the following prescription:

R Chloralis hydrastis, 3j;
Sodii bromidi, 3ijss;
Aquæ chloroformi, 3iv;
Spiritus anisi, gtt. vj.

M. Sig.: Teaspoonful in water after meals, three times a day.

He thoroughly indorses its use, for he believes it is impossible to get along without it. After the first ten days substitute for this prescription tincture of physostigma in 10- or 15-minim doses, substituting it for the bromide solution, first after breakfast, and then in a few days after supper, so that the patient takes physostigma after breakfast and supper, the bromide after the mid-day meal and at night. Toward the close of four weeks three doses of physostigma are given, and but one dose of the bromide, this at night.

During this treatment the patients rapidly improve. The weight increases, the average gain being ten to twelve pounds in the four weeks, and the lower curvature of the stomach rises, so that at the end of the four weeks it lies just under the navel. This rise of the lower curvature is no idle fancy; it is to be regularly expected. During the four weeks intragastric faradization may be employed, but the author states that he

is using it less than formerly, and finds that the majority of patients do just about as well without it as with it. In impressionable patients, however, it has a very decided mental effect. The return to ordinary daily life must be gradual, and a week at least should be taken for what he calls the hardening process.

The month after the rest cure patients must be careful about overdoing, must lie down every day after lunch, and must wear an abdominal belt. Food between meals must be continued, liquids at meals interdicted, and no raw fruit allowed.

In nearly every case the first week after the rest cure shows a decided slump in the patient's condition, the patients losing a little in weight and complaining again of their gas and distress. These symptoms will pass in a few days, but it is well to warn your patients in advance that such a slump will probably occur.

Under this treatment it is rare to be disappointed. The patients gain in nutrition steadily for weeks or months. They gain on an average ten pounds in the rest cure, but at the end of the year they are often thirty pounds heavier, and somehow or other the stomach stays up in place. The results are so good from such simple means that any operation on these stomachs in the way of stretching them up in place is totally and absolutely out of the question, and should be considered a surgical disgrace.

THE TREATMENT OF FEVER CASES.

DREW in an article in the *Boston Medical and Surgical Journal* of August 8, 1907, states his early opinion that there is no specific for typhoid or pneumonia that can be depended upon has not changed, although he is willing to accept an antitoxin when proved and found true. He does not use venesection, tartar emetic, veratrum, aconite, poultices, blisters, or wet cups; nor mercurials, except an initial dose of calomel, which may or may not be better than a saline purge. He has not tested bryonia, phosphorus, aconite, or arsenic of the homeopathic pharmacopœia, and is not pre-

pared to deny to these drugs a specific action. He does give an occasional small dose of morphine, codeine, or one of the coal-tar products, but it is the author's belief that in the presence of this necessity our natural weapons of defense have not been well used.

In typhoid fever he has used acetozone quite extensively, and has credited it with germicidal and antiseptic properties. He has given this as an intestinal antiseptic, potent, if potent at all, by virtue of the nascent oxygen it gives off when decomposed. Of this antiseptic, he gives an ounce of a one-tenth of one-per-cent solution every hour, followed by six or seven ounces of pure cold water, if the patient will readily take that much. Typhoid fever patients rarely object to this solution, and commonly drink a glass of pure water readily to take away the taste. This he considers an additional advantage. He has repeatedly seen the temperature rise and abdominal discomfort increase when acetozone was omitted, and promptly decline when it was resumed. This experience has led to the conclusion that in this organic peroxide known as "acetozone" we have an entirely harmless drug of real value.

It has been held by some that the practical result of giving fever patients liberal hourly draughts of cold water is to rob the blood of its normal salts, coincident with the more active elimination of the toxins of living and dead bacteria. Drew respects this opinion because it seems to be based on a physiological principle, and he meets the objection by adding the most important salts of the blood to the diet or giving them in the form of a mildly effervescent drink. In pneumonia he often adds $2\frac{1}{2}$ grains of sodium chloride, 1 grain of potassium bicarbonate, and 1 grain of ammonium carbonate to 4 ounces of cold water, to which solution is added a teaspoonful of lemon juice, which is given every hour while the mixture is slightly effervescent. By following this with 4 ounces of pure cold water we refresh the patient, assist the skin and kidneys in their eliminating function, keep up the blood-pressure, and sustain the heart. He rarely

sees the necessity of giving strychnine or an alcoholic until the onset of resolution in pneumonia, and more rarely still does he give an alcoholic in typhoid fever at all. This is about the sum total of his internal medication. The pure cold water he gives, and the pure air he tries to allow, he counts first, and esteems the drugs of secondary importance. For nourishment he depends largely upon milk, which is substituted for cold water-once in three hours.

PRIMARY DYSMENORRHEA.

GLASGOW in the *Medical Record* of August 3, 1907, tells us that while the young woman during the period should be advised not to make any unusual physical or mental effort beyond her accustomed activity, she is in most cases quite equal to the performance of her daily tasks. The constant calling attention to the activities of the organs of generation does not, seem wise, although the young woman's guardians should see that she is properly instructed on all physiological matters relating to her future welfare. When the pain or discomfort is excessive it is wise for the patient to remain in bed while it continues severe, adopting preventive measures during the intermenstrual period.

Anemic girls who are leading lives of close confinement will be greatly benefited by spending an hour or two every day in outdoor exercise, and this they can themselves arrange by a little self-denial, perhaps, especially during the summer months. After forming the habit of daily outdoor exercise, and observing care as to diet, patients are often amazed at the improvement in their symptoms. It is a wise precaution to empty the bowels thoroughly before the expected period, as it often materially decreases the pain. During the period hot drinks and the application of external heat are of benefit; a hot sitz bath will add greatly to the patient's comfort, and a few small and repeated doses of phenacetine. During the intermenstrual period the patient should take hot douches twice a day, avoiding colds, and keeping the feet warm

and dry. Daily exercise, nutritious food, faradism when indicated, and tonics to build up the constitution are necessary. Some cases are benefited by dilatation and curettage, but not all by any means, and it is best to employ medical means with the hope of benefiting the patient before resorting to harsher measures.

Hydrastis combined with nux vomica has rendered the author good service in very many cases, the only drawback being the fact that it must be continued for a lengthened period, usually two or three months, and that it has a disagreeable taste. There are now other remedies on the market containing hydrastis, and also viburnum, which are not unattractive to the eye and not disagreeable to the taste. Some patients object to taking such drugs indefinitely, and for such apiol 5 minims, in capsule, three times a day during the week preceding menstruation, will be acceptable; or tincture of pulsatilla in 5-drop doses, three times a day during the week before the expected period, will be found useful. In all cases the patient should keep the skin and other eliminative organs active, should avoid colds, have daily outdoor exercise, and endeavor to keep the nervous and other systems in healthy condition by wholesome, nutritious food, and tonics when necessary.

THE TREATMENT OF ANEMIA.

MELTZER, in the *Journal of the American Medical Association* of August 24, 1907, tells us there is a simple method of treatment of pernicious anemia based on an advance made in the understanding of its etiology. The pathology of this disease, which is also designated as primary or idiopathic anemia, is admittedly obscure, but it was generally assumed that the cause is probably within the blood itself. During the past few years several writers have advanced the view that the disease is caused by an infection or an intoxication from the gastrointestinal canal. These surmises had not much significance, since no facts were available showing a connection between the anemia and some definite

form of infection or intoxication. Recently, however, in a profound and extensive study of the chemistry of the feces and the urine and of the bacteriology of the feces of fifteen cases of pernicious anemia, Christian A. Herter made a discovery that within the intestinal tract of such patients certain specific putrefactions are going on which are caused by the activity of anaerobic bacteria, and that the bacillus capsulatus aerogenes, discovered by Welch, is greatly in evidence in the feces of these patients. With the recovery of the patients from their anemic condition the predominance of this anaerobic bacillus in the feces disappears. Here we have a definite, well-established fact that at least in a certain number of cases of pernicious anemia the anemic symptoms run parallel to the presence of well-defined anaerobic bacteria in the intestinal tract, and are probably caused by them.

Among other measures of treatment in these cases, Herter recommends frequent and thorough irrigation of the colon, since it is the chief thriving place of these bacteria. Following this suggestion, Dittmar and Hollis were able to report a few months ago cures in two cases of pernicious anemia by irrigation of the colon which resisted all other methods of treatment. A few years ago Grawitz reported several cures of pernicious anemia treated by lavage, irrigation, restricted proteid diet of animal origin, and other merely dietetic measures. It may be that lavage, as well as the restriction of the proteid diet, is unessential to the success. At any rate, the discovery that a good many cases of pernicious anemia are due to intestinal putrefaction, caused by anaerobic bacteria, and that some of these patients can be cured simply by efficient irrigation of the colon, present surely a valuable scientific and practical progress.

Another point on which the author touches very briefly relates to the rôle of iron in the animal organism and its use in the treatment of anemia.

It is an old, well-established clinical observation that inorganic iron is a most efficient remedy in chlorosis. For the last two or three decades, however, its use was

opposed and ridiculed by able physiological chemists and pharmacologists on the ground that inorganic iron cannot be assimilated or even absorbed. The history of the scientific struggle over this subject is very interesting and instructive, and it is the author's belief that the struggle is now decided in favor of the clinical position, and that recent pharmacological writers, at least the majority of them, fully admit that ingested inorganic iron is just as capable of being absorbed and assimilated as the organic iron compounds of the food.

ON THE CONTINUOUS ADMINISTRATION OF FLUIDS BY THE RECTUM IN THE TREATMENT OF ACUTE GENERAL PERITONITIS.

MOYNIHAN in the *Lancet* of August 17, 1907, calls the attention of his countrymen to an article in the *Annals of Surgery*, 1906, vol. xliii, p. 231, by Dr. Le Conte, of Philadelphia, who in discussing the treatment of diffuse septic peritonitis drew attention to the method of introducing large quantities of fluid into the rectum which he had witnessed in the clinic of Dr. J. B. Murphy at Chicago. The results which Dr. Murphy and Dr. Le Conte had obtained in the treatment of acute peritonitis due to appendicitis were so remarkable that Moynihan hastened to put the principles enunciated in that paper into practice. Certainly the most novel and in his judgment the most important of the several points mentioned therein had reference to the continuous administration of fluid by the rectum after operation. He has come to the conclusion, after a fairly large experience of it, that there are few recent therapeutic measures which are in value equal to this. Moynihan has up to the present time treated nineteen consecutive cases of acute general peritonitis due to appendicitis, with two deaths, and the recovery of several of these patients is, he believes, largely if not solely due to the continuous administration by the rectum of saline solution over a period of two to four days after the operation. But it is not only in such cases that he has found this

method of value. In two recent cases of partial gastrectomy and in one case of complete gastrectomy the recovery of the patients was undoubtedly helped by this abundant supply of liquid to them. The writer describes briefly the method of administration which he has found the most useful, and expects shortly to add the details of a few cases in which he has adopted it.

The first point is concerned with the selection of a proper rectal tube. To find a perfectly satisfactory one is no easy matter. The patient during the administration of the infusion is generally propped up in bed, and if a short, solid tube is used the rubber tube attached to it is apt to kink. He has used in all his recent cases a tube one foot in length and half an inch in diameter, made of pewter, with a slightly bulbous extremity which is introduced into the rectum. The tubes are supplied to him by Messrs. Allen and Hanburys. At the end, and on all sides, of this bulb holes are pierced so that fluid can easily pass through them, and flatus can escape and can be seen bubbling through the supply-tank or funnel. If a single aperture only is present in the tube it is apt to be blocked by feces. When there are many openings the rectum is equally distended above the sphincter and the obstruction of the flow of fluid by feces does not occur. The tube is introduced about from two to three inches into the rectum, and at the anus it is bent sharply so as to lie easily on the bed. To its outer end a long rubber tube is attached, which leads to the source of supply at the bedside.

The most convenient vessel to hold the saline solution is an "infusion flask" (Sahli's pattern). This is of the type of a Florence flask, but instead of being globular it is triangular in shape, having a large base. The flask holds from three to four pints and is closed at its neck by a rubber stopper, through which there are three openings: the one admits a glass tube, which at one end reaches to the bottom of the flask and at the other is attached to the rubber tube leading to the rectum; a second admits the thermometer; and a third a tube which acts as an inlet for air. The whole glass flask

is immersed in a bath of hot water, beneath which a spirit lamp burns. This secures an equable temperature of the saline solution. The best temperature is from 100° to 102° F. If the fluid is hotter than this it is not retained well; its temperature is probably three or four degrees lower than that shown by the thermometer when the rectum is reached.

When the tube has been introduced into the rectum and the flask attached the latter should be elevated so that its base is about from three to six inches higher than the rectum. The saline begins to flow and continues to flow at the rate of about a pint an hour. It is not desirable to introduce more than one and a half pints, or at the most two pints, during the first hour; subsequently a rate of one pint in the hour should be maintained. The rapidity of the flow is altered by raising or lowering the flask. It should be regulated by the patient's comfort. If a feeling of tightness or distress is caused the flow is too rapid. As a rule no uneasiness is caused till about five pints have been introduced. It may then be necessary to retard the flow for half an hour or an hour, or even to stop it for a few minutes. In only one case has less than five pints caused distress. If the rate of flow be regulated properly and the temperature of the fluid not altered from seven to ten pints can be introduced without any interruption. If flatus reaches the rectum it can escape by the tube. If, as rarely happens, the fluid introduced acts as an enema the tube may be replaced as soon as the bowels have acted. Care and almost constant attention on the part of the nurse are necessary to make the administration a success; a marked difference in the capacity of nurses will probably be discovered by all who try the method. In place of the infusion flask a funnel may be used which the nurse must keep filling from a jug. This is tedious, and a variation in the temperature of the fluid is inevitable.

The largest quantity of fluid taken by any patient of the writer during the first twenty-four hours was 16 pints; the largest, quantity administered was 29 pints, extend-

ing over three days. These quantities were borne quite easily, without any distress whatever. The change in the appearance of a patient who is absorbing fluid so rapidly is very remarkable. If the case is one of acute general peritonitis the patient who looks livid, whose eyes are sunken, whose skin is moist and cold, whose mouth is so parched that his tongue can hardly move, begins in a few hours to look ruddy and "clean," his mouth is moist, his eyes are bright, and all his aspect is one of comfort and contentment. The pulse gains volume and improves steadily in character, urine is passed in large quantities, and the skin keeps moist. Not a few patients say that they feel very hot, and some of them perspire freely. It is a question, perhaps, as to how far one is justified in carrying this treatment in patients whose kidneys are defective. In one case of partial gastrectomy the author gave 16 pints of saline solution in twenty-four hours; this represents a large dose of sodium chloride. At the end of the twenty-four hours it was noticed that the patient's face looked fuller and rosier than it had ever done, and a slight edema of the lower eyelids developed. The injection was therefore discontinued for twelve hours, to be again administered, without any ill effect.

ANEMIA.

In the course of a discussion published in the *Journal of the American Medical Association* of August 24, 1907, BRIDGE calls attention to one medicament which he believes is of great value in chlorosis. This drug is preëminently valuable in chlorosis as a therapeutic measure capable of increasing the hemoglobin of the blood. It has been shown, and clearly enough, he believes, that iron in many of these cases is of little value. The one drug in his belief is calomel in tonic doses—not cathartic doses—that is, from 1/50 to 1/30 of a grain, given three times a day, but not oftener. How it works or operates he does not know or pretend to know, but that it has a power vastly greater than the iron preparations in securing good blood and increasing the iron in the blood

there is no question in his mind. It should be given at least a month continuously, and there is, of course, no objection to giving at the same time iron or any bitter tonic—or all together.

THE BIER SUCTION TREATMENT OF TUBERCULAR SINUSES.

SEVER (*Boston Medical and Surgical Journal*, June 6, 1907) records sixteen cases suffering from tubercular sinuses treated by Bier's suction method. By this treatment he notes that the contents of abscess cavities are completely drained off, thus removing the pus, and that the vacuum causes a hyperemia which stimulates the healing process. The cups are very small, circular ones of glass, about $1\frac{1}{2}$ inches in diameter, 2 inches in height, with the top tapered to fit a rubber tube with a rubber bulb. The cup is applied wet, the bulb being compressed at the time, thus creating a vacuum, which is of great enough degree to cause the cup to stay in place.

Where this was applicable the cup method was supplemented by the compression bandage—for instance, when the abscess involved the knee, elbow, hand, or ankle.

The treatment was carried out daily for one hour at a time, nor was the suction strong enough to cause pain. Every few minutes the cups were removed to clean them, and to renew the vacuum. Where the compression bandage was used this was left applied throughout.

Several cases, including those in which hemorrhage occurred, either lost ground in general condition or did not gain at all, but promptly improved following the omission of the treatment.

At first there was a considerable increase in the amount of the discharge, which later diminished. In some cases the discharge remained more abundant than before the institution of the treatment. The author notes that in a number of cases the condition was improved both generally and locally. Half the cases were either wholly healed or markedly improved. In five the conditions were not apparently improved locally, but there was distinct gain in weight and color-

index. Three cases lost ground to such an extent that the treatment had to be omitted. The improvement in their local condition was largely due to the cupping, seconded by the improvement in their general condition.

The occurrence of hemorrhage was noted in but two cases. When the sinuses were of long duration they were less benefited than those of comparatively recent cases.

RIGID FLATFOOT TREATED BY EXCISION OF THE SCAPHOID.

LEGG (*Boston Medical and Surgical Journal*, June 6, 1907) observes that rigid flatfoot is a result of congenital flatfoot, the patients having always noted that their feet were flat. They do not experience discomfort until after puberty, and this is because of the increased weight at that time. The body weight resting more or less on the scaphoid, the pain is often extreme.

It is true that many cases of congenital flatfoot go through life with perfect flexibility. If the foot becomes rigid with a falling longitudinal arch and downward displacement of the scaphoid bone, associated with alterations in the shape of the tarsal bones, and when neither deformity nor disability can be helped by plates or braces, Legg considers excision of the scaphoid peculiarly applicable. The objects of the operation are to remove a wedge from the inner side of the foot, thus allowing the correction of the arch, and the relief of pain by the removal of pressure. A curved incision is made over the scaphoid with the convexity directly downward. The scaphoid is grasped with lion forceps and enucleated by freeing its articulations with the tarsal bones. The foot is then put in correct position and secured there by plaster of Paris. The tendons of the peronei, and in some cases the tendons of the tibialis anticus, extensor proprius hallucis, and extensor longus digitorum, should be divided in order to fully correct the valgus.

After-treatment is of major importance. The foot should be maintained in its correct position by plaster of Paris for three or four weeks, after which a shoe may be fitted with a properly adjusted plate, the patient being

instructed still to use crutches for another week. Massage, manipulations, and exercises designed to furnish strength to the foot are of great benefit. After five or six months the plates may be omitted.

In the Orthopedic Department of the Carney Hospital thirteen operations of excision of the scaphoid for the relief of rigid flatfoot have been performed, and the results of this operation in one to five years after operation, the writer observes, are that pain is relieved in all cases; that deformity in most cases can be corrected. The flexibility of the foot, however, cannot be regained, though the operation does not weaken the foot. By removing the scaphoid, which is the displaced keystone, and having the internal cuneiform occupy its normal position the foot is strengthened.

IODINE-BENZINE DISINFECTION.

The use of a solution of iodine in benzine is still strongly praised by HEUSNER (*Deutsche Zeitschrift für Chirurgie*, lxxxvii, 4, 1907), who gives additional directions for its preparation and use.

He uses a solution of 1 part of iodine in a mixture of 750 parts of benzine and 250 parts of liquid petrolatum. Solution may be rapidly effected by dissolving the iodine first in 10 parts of ether or by using a 10-per-cent tr. iodi. The addition of the petrolatum prevents the irritation which may result from the removal of the fat of the skin. For very tender skins or around inflamed parts more petrolatum may be added. There is the same danger of explosion as with pure benzine, and the waste left after washing must be handled carefully. The waste is small, as so much evaporates. Each person is given $\frac{1}{2}$ pint of fluid for disinfection of the hands, which must not be washed in water first, as the agent acts better when the skin is perfectly dry. If necessary the part may be washed in petrolatum afterward. After cleansing for five minutes with a brush and coarse cloth the skin is smeared with vaselin containing 2 per cent of iodine, and the hands of the surgeons and nurses covered with cotton gloves, as otherwise there is difficulty in holding slippery objects.

After the operation the stain left by the iodine may be removed by washing in alcohol followed by sodium hyposulphite. No mercurial disinfectants can be used with this, as an irritating salt is formed by the action of the iodine. Catgut soaked in 2-per-cent iodine-benzine for two weeks and preserved dry or in 2-per-cent petrolatum solution keeps perfectly and is sterile.

INJURIES OF THE ULNAR NERVE—TREATMENT.

The ulnar nerve is especially liable to injury at the point where it passes over the inner surface of the humerus above the elbow, and BORCHARD (*Deutsche Zeitschrift für Chirurgie*, lxxxvii, 1) states that we should always seek here for the source of trouble in case paralysis of this nerve follows trauma and there is no sign of external injury.

The nerve may be injured indirectly by a violent contraction of the triceps, which should normally push the nerve a little out of its way. If the motion occurs so rapidly that the nerve has not time to move, it may be pinched between the muscle and the bone. In blows with dull instruments, which cause no severe injury of the soft parts, the exposed portion is most often injured. In cuts the nerve may either be directly injured or may be pressed upon by scar tissue, as the wound heals. After fracture the same is true, but in addition it may be stretched by passing over extensive callus, and thus may be led to degenerate.

Operation should not be performed before any external wound is entirely healed and a fracture united, as the same condition may follow the process of healing, especially in suppurating wounds. If the nerve is entirely cut through by a sharp instrument, it is of course united when the wound is stitched. If the skin is not broken and the nerve entirely severed it is best to defer operation until any effusion of blood is resorbed, so that union by first intention may be expected. If the nerve is not certainly severed it is best to wait six to eight weeks, and if the condition is not improving, to expose the nerve. If there is permanent neuralgia it is

best to operate promptly, unless there is evidence of injury of the cervical sympathetic. In case of fracture or soiled, contused wounds, it is wise to wait until other tissues are healed before interfering.

After operation it is most important to guard the nerve from further scar pressure, and this is done by embedding it between two layers of muscle. If there is no result after operation it is probably because the nerve is pressed upon by recent scar tissue, and a second operation may be performed to free it. If the nerve is exposed, and found to be thickened and degenerated, but continuous, it should be tested electrically, to determine if it is conductive, and if not the degenerated portion should be resected. If the space left between the ends of the nerve is not more than $1\frac{1}{2}$ inches, the ends may be drawn together and united. If it is more than this, it is better to resect a little of the bone if this would not make the arm too short, and thus unite the ends directly. Longer breaks must be made up by plastic operation, which are best performed by splitting the nerve and leaving the uniting section in connection with the nerve. Implantation of pieces of other nerves gives no better results than the formation of a tube in the tissues to guide the direction of the nerve growth, or the use of catgut threads for the same purpose. In some cases the nerve is injured by contraction of scar tissue in its own capsule, and the simple splitting of this is enough to restore its conductivity. If the bone is very irregular and rough it is necessary to form a thick cushion of muscle between it and the nerve, to protect this from irritation. In some cases the nerve will be found so completely degenerated that it is necessary to graft another nerve root on it. The median and musculocutaneous are the only ones which should be used for this purpose. The after-treatment, by means of electric currents along the nerve and massage to improve local nutrition, is of the greatest importance. Return of function is obtained in about three-fourths of all cases; it generally begins in six to eight weeks, and may continue for as much as eighteen months.

NEW VARIETY OF INTERNAL HERNIA.

A form of hernia which has not hitherto been described is mentioned by VON ARX (*Deutsche Zeitschrift für Chirurgie*, lxxxvii, 4), who has seen two cases.

The case first described is that of a man of powerful build, who suffered with symptoms of ileus whenever he made any excessive exertion. The pain was always in the same spot, in the left iliac region, and as it was steadily growing worse operation was advised. The abdomen was opened in the middle line, and at first nothing abnormal was detected. Search disclosed a pocket of fibrous tissue, extending from one rectus muscle to the other, across the linea alba. This pocket was lined with peritoneum, and a tip of the omentum showed a tendency to enter it. The pocket was split from end to end and was closed. Great difficulty was experienced in closing the wall, as the recti muscles were cylindric rather than flat, and were very hard to draw together. There was no further pain.

A similar case was seen in a woman, in whom a fibrous cord, separated from Poupert's ligament, could be felt from outside. The omentum was pinched between this cord and the ligament, with very similar results. The cord was divided extra-peritoneally, and all symptoms ceased.

CHRONIC INTERSTITIAL PANCREATITIS—OPERATIVE TREATMENT.

Although the fulminant character of acute pancreatitis has led to operative treatment of this condition, the chronic forms have not been looked upon as material for the surgeon. MARTINA (*Deutsche Zeitschrift für Chirurgie*, lxxxvii, 4) shows that the condition may be relieved, at least temporarily, by such treatment.

The symptoms in two or three cases led to a suspicion of cancer, and although no tumor was found at operation, the head of the pancreas seemed so hard that it was exposed, to determine its condition. The entire pancreas was hard and tense, and the capsule so much distended that on incising it the pancreatic tissue bulged out far beyond

it. The pieces removed for examination showed the process to be chronic pancreatitis, but the operation resulted in complete relief of all symptoms. Martina believes that the relief was due to lessening the pressure of the capsule on the swollen organ, and there has been no return of symptoms for three years since the operation. As this condition is ordinarily a result of disease of the bile passages, it would be wise to examine the pancreas in all operations on these, and to split the capsule if it seems too tense.

SURGERY OF THE KIDNEYS.

All the cases in which operations for renal conditions have been performed in Braun's clinic, in the last ten years, are reported by DOERING (*Deutsche Zeitschrift für Chirurgie*, lxxxvii, 1), who gives the case histories, and a summary of the principles which guide the treatment of each condition.

1. *Hydronephrosis*.—Simple nephrotomy is of no value in these cases. It rarely leads to cure and convalescence is extremely slow. If the other kidney is in good condition and operative treatment is demanded, the diseased organ should be removed, unless the distention is due to a stricture of the ureter, which can be relieved by plastic operation, this being often the case when there is nephroptosis.

2. *Pyonephrosis*.—Simple nephrotomy is of very little value, rarely giving good results and almost always leaving a fistula. The constant secretion of pus causes systemic toxemia, with injury to the opposite kidney. Nephrectomy is always to be performed unless it is forbidden by the general bad condition of the patient. In this case a temporary nephrotomy may be performed and the kidney drained externally. The systemic condition and the condition of the other organ may then improve sufficiently to permit a radical operation.

3. *Renal Calculus*.—(Only cases with hydro- and pyonephrosis are considered here.) If it is impossible, by removal of the stone, to make a free passage to the bladder, or if the substance of the kidney is so thoroughly destroyed that no further function is

to be expected, nephrectomy is the operation of choice, if the opposite organ is active. In case of anuria it is best to perform bilateral nephrotomy at once, as there is as much likelihood of bilateral stone as of reflex anuria.

These views are much more radical than those of most authors, and differ especially from those of Kuester, who considers nephrotomy or pyelotomy the operation of choice in both hydro- and pyonephrosis, and does not sacrifice the kidney until this method of treatment has shown itself of no value in the individual case. Riedel, Eiselsberg, and Trendelenberg occupy a midway position, but tend to prefer excision of the diseased kidney in most cases.

EXCISION OF THE BLADDER—NEW METHOD.

Since it has been known that the papillomata of the bladder are frequently malignant, the total extirpation of this organ has been performed several times. Apart from the vascularity of the perivesicular tissue, the chief difficulty of the operation is to provide for the escape of the urine. The cut ends of the ureter have either been left in the open wound, implanted in the rectum, or implanted in the vagina. In the first instance the patients all succumbed to septic infection of the wound, in the second to pyelonephritis from ascending infection, and although the last method has given some good results, it robs the woman of sexual power and is only applicable to the female. In addition there is a constant, foul-smelling discharge from the vagina.

To avoid the disadvantages of each of these procedures is the aim of the operation described by ROVSING (*Archiv für klinische Chirurgie*, lxxxii, 4), the peculiarity of which is that the ureters are brought out through the skin by an incision different from that of the operation. The technique of the operation, which has been performed three times, with good results in each case, is as follows:

The bladder is removed unopened, like a cystic tumor. It is filled with 200 Cc. (6

oz.) of phenosalyl, and the patient placed in the Trendelenburg posture. The bladder is exposed by a curved incision, convex below, and the insertions of the vecti are partly severed. The loose connective tissue around the vertex and sides is then divided after ligating in sections, so as to avoid all bleeding. The peritoneum is then separated from the posterior wall. If it is firmly adherent it is removed with the bladder, and the gap in the peritoneum repaired at once. The ureters are cut through with the cautery, between ligatures, one-half to one inch from the bladder. The base of the bladder is then freed, in males the prostate also, and the urethra burnt across between ligatures. In males great care must be exercised not to injure the rectum, and a clamp is left on the stump of the membranous urethra for twenty-four hours, to prevent bleeding. In this way there is almost no loss of blood. The large wound is spread with a piece of gauze, and gauze tampons, moistened with one- to two-per-cent copper sulphate solution, are packed into it. The ends of the strips are brought out at the center of the wound, the vecti are united with wire, and the wound is sutured. The ureters are then exposed on each side by an incision immediately below the kidney, beginning at the edge of the erector spinæ and extending outward about two inches. The ureter is hooked up by the bent finger and drawn out of the wound as it is freed from adhesions by a finger thrust deep into the opening. Thus we have both ureters hanging out from Petit's triangle for their complete length. The incisions are completely closed and the ureters allowed to hang free in a sterile glass tube, after a No. 12 catheter has been introduced into each and through the abdominal wall. It is better to permit the free end of the ureter to drop off by dry gangrene than to cut it close to the skin, as it retracts and makes a funnel-shaped opening which is very hard to drain. If the end is allowed to fix its own line of demarcation there is left a small papilla, in which is the mouth of the ureter and to which a drainage apparatus is easily adjusted. The necrotic portion of ureter is separated at the end of eight days, and the

catheters withdrawn. The flow of urine is provided for by a bandage, in which are two silver plates, each with a hole which fits over the mouth of a ureter and opens into a silver tube which leads to a urinal hanging at the pubes. The first case has worn this apparatus day and night for eleven months, and there has been no leakage nor soreness of the skin around the ureters.

EXPERIMENTAL CONTRIBUTION TO EARLY AMPUTATION IN TETANUS.

HUTCHINGS (*Sonder-Abdruck aus der Rindfleisch-Festschrift*, Leipzig, 1907), with the idea of determining whether or not amputation is a serviceable therapeutic agent in the treatment of tetanus, conducted a series of experiments. After inoculation of guinea-pigs, on the first outbreak of symptoms a certain number were subjected to amputation. Others were not thus treated. The amputated animals died in precisely the same time and with exactly the same symptoms as those without operation. He noted the same result in the case of dogs, though the latter are comparatively immune to tetanus infection. Similar results were obtained in the case of sheep.

FISTULA OF THE URACHUS.

The idea that a fistula of the urachus may be caused by an obstruction to the normal urinary passages, even in fetal life, is combated by DRAUDT (*Deutsche Zeitschrift für Chirurgie*, lxxxvii, 4), who considers that it is an anomaly similar to persistence of Meckel's diverticulum.

The affection is always characterized by peculiarity of the shape of the upper part of the bladder, which is tubular instead of vaulted. If there is difficulty in determining the nature of the fistula, a chemical examination of the secretion will show its urinous nature, or an injection of indigo-carmin may be given, the blue color showing that the fluid is from the kidneys. The canal may be patulous, but if the urethra is free no urine may escape from it. In this way it may appear that an obstruction to the urin-

ary flow caused the fistula. The only treatment to be recommended is extirpation of the entire tract with the navel. Any part of the canal remaining in connection with the navel may lead to a cystic growth, or to a blind fistula which is not easy to heal. The peritoneum is always injured in the radical operation, but in infants this is of no importance, on account of its cobwebby character.

SURGICAL FORMS OF ILEOCECAL TUBERCULOSIS.

HARTMANN (*British Medical Journal*, No. 2415, 1907), after calling attention to the fact that the clinical recognition of this form of tuberculosis is of comparatively recent date, describes two forms.

The enteroperitoneal form is ulcerative in type and rarely forms strictures.

The hyperplastic form, simulating neoplasm, is generally limited to the cecum and spreads in the direction of the colon, seeming to be a descending tuberculosis. The cecum appears externally increased in volume, more or less mobile in the iliac fossa, and often included in a fibroadipose mass which attains a thickness of three or four centimeters. The latter is a manifestation of the chronic inflammatory process. It may spread as far as the spinal column and contain lymph glands. The regional lymph glands are involved, and are more voluminous than in cancerous degeneration. The mesocolon is often retracted, displacing the colon and cecum upward. Mucous membrane may or may not be ulcerated. At times it shows villous growths.

Tuberculous lesions may develop at the surface of the mucous membrane, or chiefly in the subserous coat. When the mucous membrane is especially affected the ulcerations are more or less deep. As a rule they stop at the muscular coat. The affection is equally observed in both sexes, and attains its maximum frequency between the ages of twenty and forty. The patient may or may not have coincident pulmonary tuberculosis. Some of the cases exhibit the reaction of the peritoneum and its sur-

roundings, simulating more or less appendicitis, others intestinal stricture and suggest neoplasm. This the more so since direct examination nearly always demonstrates the presence of a tumor.

In the enteroperitoneal form, together with the signs of the local inflammation and the tumor, the stools are frequently copious, liquid, and contain blood. At times the first symptom indicating trouble is a sharp attack of pain. Subsequently, however, the tumor increases rather than diminishes, and there is a steady progression. With the enteroperitoneal form there is often a subacute abscess formation opening spontaneously through the skin in the femoral region, discharging serous pus mixed with fecal matter. If such abscesses open into the intestine their evacuation is accompanied by purulent discharge per anum; if they burst into the peritoneal cavity death results from acute peritonitis. Associated with these ulcerative forms there is usually a pulmonary tuberculosis.

Clinically, the hyperplastic form has an insidious onset with loss of appetite, slow digestion, and disagreeable but vague sensations in the right iliac fossa. This condition may remain stationary for months, improving temporarily under courses of treatment. Later there develop signs of intestinal obstruction. At times the tumor is placed above the normal position of the cecum. In the hyperplastic form the lungs are often intact. The average duration of the disease is two and a half to three years.

The enteroperitoneal form of ileocecal tuberculosis may be mistaken for appendicitis, but the absence of resolution of the indurated mass, the subacute attacks of inflammation, the concomitant diarrhea, and the frequent coexistence of pulmonary tuberculosis should guide one to a correct conclusion.

In actinomycosis after abscess formation the diagnosis is apt to be made by microscopic examination. Errors may also arise in the development of sinuses of bony origin.

The hyperplastic form may be mistaken for neoplasm; its evolution is however

slow, the tumor is not nodular, and it preserves to an extent the normal shape of the cecum.

Treatment is surgical. In cases of glandular tuberculosis with subserous nodules, with signs of slight localized peritonitis and without symptoms of lesions in the intestinal mucous membrane, the simple explorative celiotomy may be followed by a cure.

Hartmann has summarized from the literature on the subject 229 operations. There were 9 partial excisions of the cecum, with 8 cures and 1 death; 78 resections with end-to-end anastomosis, with 59 cures and 19 deaths; 19 resections with end-to-side implantations, with 16 cures and 3 deaths; 31 resections with side-to-side anastomosis, with 26 cures and 5 deaths; 10 resections in two sittings, with 7 cures and 3 deaths; 29 short-circuitings (ileocolostomies), with 25 cures and 4 deaths; 9 unilateral exclusions, with 8 cures and 1 death; 22 bilateral exclusions, with 20 cures and 2 deaths; 22 patients were subjected to multiple operations, with 14 cures and 8 deaths. Of the 229 cases operated on there were 46 deaths. Before 1900 there were 73 cases with 22 deaths, a mortality of 30 per cent. After 1900 there were 58 cases with 7 deaths, a mortality of 12 per cent.

Hartmann personally has made seven resections for tuberculous disease, with one death, and that a case operated on before 1900. The disease left to itself is always fatal. The method of ablation in two sittings seems unnecessary in tuberculous disease of the cecum, where the obstruction is never extensive.

Through an incision in the iliac fossa we can reach the diseased cecum and take it out of the abdomen, limiting with gauze the field of operation. The breaking down of adhesions does not present great difficulty. It is important to remove with the cecum the glands generally occupying the ileocecal angle, which are always enlarged and often caseous. Resection having been performed, the ileum and the colon are united end to end or side to side. Hartmann prefers to close the cut intestines and do

side-to-side anastomosis, using two sutures, both continuous. The inner one includes all the coats, the outer the subserous and the muscular and mucous coats. In the enteroperitoneal form, or when with the hyperplastic tuberculosis there is an extensive mass of adhesion, resection is dangerous. In the indirect treatment the exclusion of the diseased part is indicated. Generally unilateral exclusion is sufficient. The bilateral exclusion with closure of both ends is especially used in cases of fecal fistula. Hochenegg advises bilateral exclusion and leaves both ends of the excluded part opened and stitched to the skin. Sometimes this practice has allowed a secondary extirpation. Even when secondary resection is not possible, the improvement is such that the patient has no trouble, gains weight, and is cured.

By unilateral exclusion is meant section of the ileum, suture of its distal end, and implantation of its proximal end into the transverse or descending colon. By bilateral exclusion is meant, in addition to the procedure just described, section of the colon in its ascending or transverse portion and suture of the two ends, thus leaving the cecum and ascending colon shut off from any communication with the general alimentary canal.

THE TREATMENT OF INFECTIOUS PYELONEPHRITIS.

JUY (*American Journal of Urology*, July, 1907) summarizes a lengthy, but extremely able, article on this subject.

Simple infectious pyelonephritis can usually be cured by sufficiently prolonged medical treatment. It is consequently necessary to look for the symptoms in order to make as early a diagnosis as possible.

It is by a systematic examination of the ureter in its abdominal course as well as in its passage through the pelvis that pyelorenal infections are to be detected. The painful points (subcostal, paraumbilical), the sensation of a large and painful ureter ascertained by vaginal examination, painful spots on the prostatic cornuæ, ureterovesical and pyelovesical reflexes, associated

with pyuria and nocturnal pollakiuria, form a clinical complex described by Bazy, which will allow one to make sure of the existence of a pyelonephritis.

Medical treatment includes hygienic measures and diet. As long as pus cells are present in the urine, the patient should be kept in bed on an absolute milk diet. Balsams may be useful, but at the present time there is a tendency toward the use of internal antiseptics; salol and especially urotropin and helmithol have given really remarkable results. And lastly, in certain cases, the medical treatment is to be completed by hydrologic medication.

The amelioration and cure of simple pyelonephritis are announced by the disappearance of the painful points along the ureter, the cessation of the nocturnal pollakiuria and pyuria.

In the pyelonephritis with distention, the indication for operation is, above all, furnished by changes in the general health, the persistency of the pyuria, and the increase in size of the kidney.

All surgical interference in cases of septic retention should be preceded by an examination as to the functional value of both kidneys. In the first place it is useful to study the total urinary depuration by the classical procedures, such as histological and chemical examination, cystoscopy, etc. These procedures are afterward applied to the study of the urine coming from each kidney, collected either by ureteral catheterization or segregation.

Nephrostomy is the operation of choice in septic pyelorenal retentions.

Lumbar fistulæ, which persist, being kept up by an incomplete retention, should be treated by secondary interference; lateral anastomosis of the ureter to the renal pelvis, resection and transplantation of the ureter, or orthopedic resection of the kidney, will result in a cure.

From the progress accomplished in conservative surgery of the kidney, secondary nephrectomy presents very limited indications.

The pyelonephritis of pregnancy, on account of its particular evolution, should

be treated medically, and surgical interference of the kidneys is only indicated after removal of the fetus. Labor should be induced only in rare exceptions.

TORSION OF THE SPERMATIC CORD.

In the course of an editorial on this subject in the *American Journal of Urology* for July, 1907, the following comments in regard to diagnosis and treatment are given:

The diagnosis of torsion of the cord is a matter of extreme difficulty in many cases. One usually thinks of a strangulated inguinal hernia with a tendency to intestinal necrosis, and it is only during the operation that the true condition of affairs is revealed. At other times an orchitis arising in a testicle in ectopia is the diagnosis, but there are no distinctive signs which will allow one to differentiate the two affections, and it has been asserted by Vanverts that a testicle whose cord is strangulated becomes easily inflamed and gives rise to lesions of inflammatory orchitis. The causal traumatism may also be the means of leading one into an erroneous diagnosis, which may be that of a deep-seated hematoma. But from the very beginning of the trouble the symptoms of internal strangulation are very prominent, and show the necessity for an immediate operation; in other words, in many cases the diagnosis is subordinated to the surgical intervention.

The prognosis of this form of strangulation is serious, unless treated surgically, because the consequences of torsion of the cord means the loss of the testicle. Spontaneous untwisting is the most favorable outcome, but in order that the testicle be free from any lesion this occurrence should take place early in the process, during the first few hours, otherwise the parenchyma of the gland becomes hyperemic, then degenerates, and finally undergoes atrophy.

If reduction of the torsion does not arise during the first few hours surgical operation is absolutely necessary, and one should not wait too long in hope of a spontaneous cure, because the testicle will rapidly

undergo disintegration; one should interfere before any invasion of the surrounding regions from the necrotic process has taken place.

The nature of the operation is a question to which much thought must be given, and whether or not a child should be submitted to castration for torsion of the cord is a matter of much conjecture. According to modern surgery, however, it is hardly to be discussed; given the advanced state of testicular lesions met with in all such cases, the facility of the recurrence of trouble, and the impossibility of solidly fixing the testicle, no hesitation is permissible, and the gland should be removed after reduction of the torsion of the pedicle. To allow a testicle to remain after reduction of the torsion simply means the continued possession of a diseased organ which will be useless in the future, and exposes the subject to further attacks of strangulation at no distant date.

BACTERIAL CUTANEOUS DISEASES.

ALDERSON (*Journal of Cutaneous Diseases*, July, 1907), after a careful study of the specific treatment of bacterial skin diseases, by which he means the treatment by inoculation of heated bacterial suspensions, announces the following conclusions:

It has not by any means been proven that opsonic therapy produces good results in acne vulgaris, furunculosis, sycosis non-parasitica, staphylococcia, lupus vulgaris, or tuberculosis cutis, any more expeditiously than the usual approved methods.

Most of the dermatological cases were "much improved." Relatively few were "entirely well." These results were accomplished only after prolonged opsonic treatment extending over weeks and months.

So far none of these cases have been reported by dermatologists, but have come from the records of surgeons and general practitioners, who might very easily misinterpret the clinical picture presented by certain skin diseases in their different phases. For instance, a patch of lupus vulgaris from which the crusts have been washed, and over which superficial healing

has taken place, might readily deceive one not specially trained to observe cutaneous lesions.

Opsonic treatment is of undoubted assistance in certain chronic bacterial skin diseases. To produce the best results, much auxiliary treatment is necessary. External and internal medication, dietetic and hygienic measures, and means of producing local hyperemia should also be employed.

INTRA-ARTICULAR INJECTIONS IN THE TREATMENT OF DISEASES OF THE HIP-JOINT.

CALOT (*Journal de Médecine*, tome lxxviii, 1907) warmly recommends intra-articular injections not only in the treatment of coxalgia, but for the relief and cure of practically all chronic arthritic affections, such as those incident to rheumatism, gout, blennorrhagia, and syphilis.

In beginning cases of coxalgia he employs a preparation made up of oil 50 grammes, ether 25 grammes, creosote 3 grammes, iodoform 7 grammes, injecting each time from 5 to 10 grammes according to the age of the patient. The needle employed is from 8 to 10 centimeters long, with the cutting point as short as possible. In fungating forms he injects 20 grammes of glycerin and 3 grammes of camphor naphthol. After four injections the contents of the joint become fluid. Thereafter the first mixture is used. About a dozen injections are made at intervals of five or six days. During injection the joint is subjected to extension and immobilization. After the completion of the course the patient is kept at rest for five or six months with extension. Complete cure is accomplished in about a year. Calot states that the injection is readily thrown into the interior of the hip-joint. In a child from eight to fourteen years old the needle is driven in 2 to 2½ centimeters below a horizontal line, passing through the pubic spine and 2 to 2½ centimeters external to the femoral artery. In the adult this reading is changed to 3 centimeters, or a point midway between the femoral artery and a vertical line drawn down from the anterior superior iliac spine. The

needle is entered with a slight inclination upward and inward. The beveled surface at its end is so turned that it faces in the same direction. The point is entered until it touches bone. Thereupon the syringe is lowered, the point still being kept in contact with the bone, and the injection is driven in.

INDUCTION OF LABOR IN CON-TRACTED PELVES.

COOKE (*American Journal of Obstetrics and Diseases of Women and Children*, June, 1907) presents an article under this title stating that a primigravida, and, in many instances, a multigravida, with no cervical laceration, will often show a more or less rigid cervix with no marked softening or dilatation, even after preliminary treatment with gauze. In such cases the Krause method of stimulating uterine contractions is the best.

The patient should be placed in the lithotomy position and the anterior lip of the softened cervix grasped and drawn down with a bullet forceps or vulsellum. A silk or linen bougie about the size of a lead-pencil, which has been prepared by thorough scrubbing with soap and warm water and then soaked for one hour in cold bichloride solution (1:1000), is fitted with a sterilized stiff wire stylet and anointed with sterile vaselin. This appliance, curved in the shape of a male sound, and guided by the fingers of the left hand of the operator, is now passed into the uterus, exactly as a sound is introduced through the penis into the male bladder.

When the tip of the bougie has passed well around the globular fetal skull and points away from the promontory of the sacrum, the ring of the stylet is held firmly by the nurse and the operator slides the bougie off it and into the uterus, between the membranes and the muscular wall, until not more than two or three inches project from the external os.

The stylet is held in place merely to maintain the curve around the fetal skull, and is withdrawn as soon as the bougie is in place. No force may be used in the introduction

of the instrument, and when this little operation is performed gently and carefully the patient will suffer in no way, the sacral promontory will not be impinged upon, the membranes will not be ruptured, and certainty of action is practically assured. If sepsis follows the blame will usually lie with the operator.

The vaginal canal is now snugly packed with gauze, and if after twelve hours no labor pains have occurred, the gauze is removed and the bougie reinserted or another placed by its side.

It seldom happens, however, that the first bougie, if properly passed up to the fundus, fails to produce the desired result.

As soon as labor pains are well established both the packing and the bougie should be withdrawn and the case allowed to proceed without further assistance. It is a serious mistake to leave the bougie in place until it is forced out of the uterus by the contractions. Such practice not infrequently results in premature and high rupture of the membranes.

In the case of a multigravida with a short, softened, and dilated cervix, the author prefers his expansion rings. These rings are of such simple construction that they can readily be made by the obstetrician. One ring will suffice for several cases, unless the spring rusts and breaks.

The appliance consists simply of a soft-rubber catheter with the tip cut off, into which is passed a long spiral watch-spring of the cheaper grade. This forms a circle when in place, and the approximate ends of the catheter are sewn together.

When boiled the instrument is sterile and ready for use.

It is then pinched up at one point and tied with bobbin tape in a bow-knot with short loops and long ends, and grasped with a bullet forceps.

The anterior lip of the cervix is now drawn down and held by an assistant or nurse, and the constricted segment of the ring, guided by the fingers of the left hand of the operator, is introduced, by means of the bullet forceps, into the cervix and just through the internal os.

The operator, still holding the bullet forceps firmly in place while the anterior cervical lip is steadied by the nurse, grasps one side of the ring between his thumb and forefinger and pushes it slowly and gently into the uterus, until about half has passed the internal os.

This is accomplished without pain or discomfort to the patient and with absolutely no danger of rupturing the membranes.

When the ring is in place, in the form of a figure 8 with its greatest constriction at the level of the internal os uteri, the vagina is packed with gauze as before, and labor may be expected to begin within a few hours or even minutes.

It is well to attach a tape to the vaginal portion of the ring, lest it work its way into the uterine cavity.

It has been the writer's experience that in selected cases, and by reason of expansibility and property of worming its way into the cavity of the uterus, this little contrivance possesses an almost uncanny power to incite uterine contractions, while its insertion is so simple when the os is soft and patulous, and its actual inability to puncture the ovisac is so apparent, that the author believes it to be worthy of careful trial.

As soon as labor pains begin the ring and the vaginal packing should be removed at once, and the case allowed to go on as when the Krause method is employed.

In conclusion he states that the induction of premature labor in the case of a primigravida should seldom be performed unless by one who has made a special study of the subject, for nearly eighty per cent of labors in moderately contracted pelvis end spontaneously, and it is wiser for any one, other than the obstetric expert, to let the woman "try herself out" in her first confinement.

In the case of a multigravida with unmistakable pelvic contraction and a history of past operative deliveries and death of the infant, the induction of premature labor is clearly indicated, and if undertaken at the proper time and performed in a proper manner, the results will be satisfactory in a very large proportion of cases.

The idea that the fetal mortality in well-

selected cases of induced labor is unduly high is absolutely fallacious, for if these same women were allowed to go on to term and were then delivered by operative measures, the infantile death-rate would be infinitely greater.

POSTOPERATIVE DILATATION OF THE STOMACH.

SEELIG (*Interstate Medical Journal*, June, 1907) records the case of a patient thirty-five years old, operated on for a large inguinoscrotal hernia complicated by an undescended testis. The patient left the table in excellent condition and remained untroubled for twelve hours, when he began to complain of nausea and pain in the epigastrium, accompanied by slight distention limited to the epigastric region. Twenty-two hours after operation the patient vomited a large quantity of dark-yellow fluid. This was followed by temporary relief of symptoms and recurrent vomiting in spite of gastric lavage. The pulse gradually became accelerated until it reached 120 beats to the minute, the patient presenting the appearance of supervening collapse. After projectile vomiting of 10 ounces of foul-smelling, dark-brown fluid, he was entirely free from pain. His stomach was washed out, evacuating large quantities of dark-colored fluid which contained bile, and shreds of mucosa infiltrated with blood. The patient was placed in the exaggerated Trendelenburg posture, whereupon the symptoms immediately abated. Hiccough, vomiting, pain, and distention ceased. Flatus was expelled freely and voluntarily and the pulse slowed down to 78. At the end of twelve hours the foot of the bed was lowered. Within an hour there was a recurrence of pain, distention, hiccough, vomiting, and rapid pulse. The foot of the bed was raised again, and immediately all symptoms ceased. The patient was kept in the Trendelenburg position for the succeeding four days, his condition all the while continuing normal. On the fifth day the ordinary dorsal decubitus was resumed, with no bad results, and from this time on recovery was uneventful.

REVIEWS.

BLOOD-STAINS: THEIR DETECTION, AND THE DETERMINATION OF THEIR SOURCE. A Manual for the Medical and Legal Professions. By Major W. D. Sutherland, M.D., of His Majesty's Indian Service. William Wood & Company, New York, 1907. 167 pp.

The consideration of blood-stains, with special reference to their methods of detection and the possible differentiation of blood from similar and dissimilar sources, is usually a matter treated in text-books, manuals, or systems, by an editor or by some writer who, usually, has given study to but few phases of the exceedingly complex problem. The biological tests for blood are rarely stated with clearness by those who consider the matter entirely from a chemical standpoint. Micrologists, spectrologists, and even chemists interested in the examination of blood for medicolegal purposes are rarely biologists. Only occasionally are systematic writers on diseases of the blood fitted, by training, for lucid exposition of its chemistry. The present author possesses that clearness of exposition and judicial consideration which characterizes many English writers, particularly in the arts and sciences. For these and other reasons the present monograph constitutes an important addition to the literature of medicolegal hematology. The volume contains chapters on the solubility of blood-stains, chemical tests for blood, spectroscopy tests, the use of the microscope in the detection of blood-stains, and five chapters dealing largely with the serological methods. Illustrative cases have been culled from numerous sources, many of which are not accessible in English, and the volume concludes with an exhaustive bibliography. Those interested in the subject will find especially valuable information on the precipitin test and on the alexine-fixation or complement-deviation test.

Major Sutherland commends as trustworthy the precipitin test, into which he goes with great detail, and tentatively views with approval a more extended use of the complement-deviation method. As a piece of book-making the little volume may be considered acceptable.

W. M. L. C.

SQUINT AND OCULAR PARALYSIS. By Lucas Hughes, M.R.C.S. Eng., L.R.C.P. London. H. K. Lewis, 136 Gower St., London, W. C., 1907.

The reading matter in this volume is divided into three parts—functional squint, paralysis of the muscles, and disturbances of muscular balance—each comprising about one-third of the number of pages. The author gives his reason for not following the usual classification—the inclusion of heterotropia under squint—in the following quotation (p. 168): "Heterotropia may be regarded as a later stage of heterophoria. The effort to maintain the visual axes in their proper direction breaks down, and an actual deviation (squint) becomes manifest. Some surgeons, especially in America, apply the term to all cases of squint, while others speak of heterophoria as 'latent squint.' Both applications of these terms are, I think, objectionable; they are misleading or pedantic. Why should a grandiose Greek name be given to such a common affection as ordinary squint? And it is misleading to think of young children having heterophoria, because actual squint has not yet become pronounced." The reviewer believes few students of muscular anomalies will agree with his statement (p. 171) that "true squint is intimately connected with errors of refraction; heterophoria and heterotropia are independent of these anomalies"—a statement that seems utterly contradictory to the meaning of the sentence (p. 22), "unless the fusion faculty be properly developed, be the refraction what it may, there can be no proper binocular vision." Much emphasis is laid, as it should be, on the presence and development of the fusion faculty as a most important factor in the etiology of squint. No doubt squint is purely, in the great majority of cases, an innervational defect and has no direct relation to the muscles themselves, and depends upon, first, the power of fusion, and secondly, on the state of refraction.

In the treatment of internal squint the author believes that orthoptic exercises are

of great value and postpones operation until other means have failed, thus conforming to modern practice. His description of the tests to determine the degree of squint and of the several amblyoscopes and exercises is lucid, easily understood, and readily followed. The method of developing the fusion faculty and improving vision in the amblyopic eye are not pursued with avidity by many oculists because of their tediousness and consumption of time and doubtful utility, but if they were more generally adopted others might become as enthusiastic as the author.

Mr. Hughes gives deserved credit to Donders, Javal, and Parinaud for their progressive writings and teaching. Landolt, another Frenchman, who is perhaps as well known on this side of the Atlantic for his work on the ocular muscles, is ignored. His advocacy of advancement as a substitute operation for tenotomy, a procedure which is becoming generally adopted, has received no mention. Worth's operation for advancement the author considers the most dependable. The reviewer prefers the method of Wootten to all others. One paragraph only is devoted to the treatment of divergent squint. To be sure it contains the gist of the matter, but one-half page seems little space in comparison to the many pages given to the treatment of convergent squint. The section on paralytic affections is comprehensive, terse, and contains a résumé of our knowledge of the subject, but as the author states in the preface, "It is quite impossible to add a great deal to the excellent work that has already been done, but I have endeavored in these pages to bring into line and compare some of the best practical teaching of the English and foreign schools."

H. F. H.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by H. A. Hare, M.D., Assisted by H. R. M. Landis, M.D. Volume IV, December, 1907.

The present volume of *Progressive Medicine* contains, as have previous issues for the quarter ending with the month of December, articles upon diseases of the digestive tract and allied organs, the liver

and pancreas, diseases of the kidneys, surgery of the extremities, fractures, dislocations, tumors, surgery of joints, shock, anesthesia, and infections, genito-urinary diseases, and a "practical therapeutic referendum." The opening article, by Dr. J. Dutton Steele, like the previous ones which he has contributed, deals with many points of practical interest to the general practitioner, for whom it is carefully prepared. After discussing the normal physiology of digestion as revealed to us by recent researches, he takes up the morbid physiology of the digestive tract and considers the effect of the digestive ferments and movements of the stomach and intestines. In the section devoted to the subject of the action of alcohol in the stomach he quotes Kast as having made a series of experiments upon the human stomach through a gastric fistula. This observer found that alcohol stimulates secretion in the stomach to a greater extent than does water or common food substances, and he maintains that the occasional use of alcohol under 10-per-cent strength does no harm; whereas if it is of the strength of 20 per cent it is distinctly injurious to the empty stomach. In other words, the subject of the action of alcohol resolves itself into a question of the percentage of alcohol contained. The presence of such substances as sugar, acids, carbonic acid, etc., in the beverage, may modify the primary effect of the alcohol considerably. For example, red wine, owing to its tannic acid, diminishes markedly the secretion of mucus. An interesting chapter is that which deals with the morbid physiology of visceral pain, and another with the subject of gastric ulcer and the morbid physiology of gastroenterostomy. In the section devoted to diseases of the intestine an interesting discussion of chronic autointoxication of intestinal origin is found.

The article of Dr. Bloodgood upon surgery of the extremities, etc., is a very exhaustive one, and contains much that is of extreme value to surgeons who are actively engaged in the practice of their profession, as is also that of Dr. Belfield upon genito-urinary diseases.

The closing article in the volume, of

about 65 pages, by Dr. Landis, deals with all of the newer therapeutic points of the last year in an entertaining and practical manner.

A CLINICAL TREATISE ON THE SYMPTOMATOLOGY AND DIAGNOSIS OF THE DISORDERS OF RESPIRATION AND CIRCULATION. By Edmund von Neusser, M.D. Authorized Translation by Andrew MacFarlane, M.D. Part I, Dyspnea and Cyanosis. E. B. Treat & Company, New York, 1907.

The American translator of this useful little book, which is Part I of a series dealing with similar subjects, points out that since the discovery by Koch of the tubercle bacillus in 1881, and the application of solid culture media for the differentiation of bacteria, physicians have come to rely largely upon laboratory investigation and less than they should upon clinical observation, whereas as a matter of fact it is the duty of the physician to use both methods chiefly in obscure cases. The book opens with a chapter upon conditions which induce dyspnea, which covers seven pages, followed by a second chapter upon dyspnea and cyanosis in diseases of the respiratory tract. Following this is a discussion of the circulatory disorders which produce these two symptoms, whether the circulatory disorders depend upon congenital defects or upon acquired cardiac lesions. Further chapters deal with the effect of vascular lesions upon these symptoms, and others upon the effect of neuroses of the heart and disorders of the intestinal tract. The presence of dyspnea and cyanosis in various infectious diseases is then considered. It is interesting to note in this connection that pleural exudates, tuberculosis, pneumonia, and pertussis are classed amongst the diseases of the respiratory tract, although a chapter in the latter portion of the book deals with other infectious diseases like syphilis, typhoid fever, plague, diphtheria, cholera, and anthrax. Surely this is a curious pathological and etiological differentiation. The closing chapters deal with dyspnea and cyanosis due to various poisons. To this important subject nearly twenty pages are allotted. Finally we have a discussion of dyspnea and cyanosis in relation to renal disease, diabetes, uremia, hysteria,

etc. The last chapter in the book deals with the therapy of dyspnea. This is very short and is the least satisfactory chapter in the volume, but as a practical book for the active physician it is well worthy of careful study and is very interestingly written.

DISEASES OF THE NERVOUS SYSTEM. Edited by Archibald Church, M.D. Authorized Translation by Julius L. Salinger, M.D. D. Appleton & Company, New York, 1908.

This octavo volume of over 1200 pages is composed of a series of articles contributed by between twenty and thirty well-known German neurologists in Berlin, Vienna, Würzburg, Breslau, Frankfurt, Erlangen, Bonn, and Heidelberg. Such well-known names as Edinger, Eichhorst, Wernicke, and Gutzmann are amongst the list of contributors. In other words, it is a book on "Nervous Diseases" of about the same size as most of the standard works upon this subject written by a number of authors instead of by one neurologist. The book suffers from the difficulties which assail all "Systems" in that there is an inequality in the different articles. The illustrations are, many of them, not as well executed as the text deserves, but aside from these criticisms the book is in many respects one of the best works in the English language dealing with this subject. Much more space seems to be devoted to treatment than is found in many works upon neurology, and great care is taken to amplify the descriptions of the symptoms of the various diseases so as to make a diagnosis fairly easy to the general practitioner. Dr. Church, the American editor, at first expected to make numerous additions to the text, but after carefully studying the opinions of the original contributors came to the conclusion that the character of the book was such that it had best stand by itself with but few additions. In addition to the description of the various diseases, their diagnosis and treatment, there are separate chapters in some instances dealing with therapeutic measures of great importance, as, for example, the article upon Lumbar Puncture by Quincke, of Kiel, to whom we owe so much in the way of introducing and popularizing this valuable method of diagnosis and treatment.

THE PANCREAS: ITS SURGERY AND PATHOLOGY.
By A. W. Mayo Robson, D.Sc. (Leeds),
F.R.C.S. (Eng.), and P. J. Cammidge, M.B.
(Lond.), D.P.H. (Camb.). Illustrated. W. B.
Saunders Company, Philadelphia and London,
1907.

Of the five hundred and twenty-seven pages of this book, more than one hundred are devoted to a review of the anatomy, comparative anatomy, and embryology of the pancreas; and still another hundred to its histology and pathology, including a full consideration of the two conditions that, from the pathological standpoint, are of the most vital importance—fat necrosis and diabetes.

This is as it should be. The surgery of the pancreas is still undergoing active evolution, and in many respects is far from having assumed its final form. During this period—through which the surgery of every organ must pass—each case presents problems that can be solved only with the aid of thorough knowledge of the fundamentals and constant reference to them. The first portions of the book contain the best existing summary of the enormous mass of literature referring to the pancreas that has accumulated in the last two decades. The extent of this is indicated by the fact that almost eight hundred authors are referred to, most of them more than once, and some of them (Langerhans, Opie, Wirsung) having from fifty to ninety separate references. The results of their labors are here summarized and are presented concisely and comprehensively.

The section on general symptomatology represents the latest and, in the opinion of the reviewer, the soundest existing views on the subject. The classification of symptoms is practical. Under physical signs it is noted that swelling is usually present and, contrary to preconception, perceptible in cases of chronic inflammation (from tumefaction of the gland), in subacute cases (from suppuration), and in acute cases (from the enlargement of the pancreas, neighboring hemorrhagic effusions, and matted omentum). On the other hand—and also contrary to the views of many practitioners—in cancer of the head of the pancreas the tumor ordinarily felt is the

enlarged gall-bladder. Fever is so variable as to be of no diagnostic value, though in a given case its character may be of value in determining the presence or absence of suppuration, of cholangitis, of hepatic abscess, etc.

Pain, except in acute pancreatitis, is also of little value; then it is agonizing and referred to the epigastrium, while in that region and likewise at a point just above and to the right of the umbilicus there is often excessive tenderness. The remark that pain under the left scapula, or between the scapulæ, serves to distinguish pancreatic pain from the right scapular pain of gall-bladder disease should have been coupled with a caution as to the unreliability of both these forms of pain as diagnostic symptoms, and hence their lack of value in differential diagnosis.

The pressure symptoms are well described and are easily understood—indeed, might almost be predicted—if the anatomical relations of the pancreas have been carefully studied.

The hemorrhagic tendency seen in most cases of pancreatic disease is believed to be due not solely to the jaundice but to changes induced in the blood by the pancreatic lesion. This is probably true, but when it is said to be “shown by the fact that patients with equally profound jaundice but in whom there is no disease of the pancreas do not bleed to anything like the same extent,” the argument seems defective. Many patients with jaundice and without pancreatic trouble have bled to death from a “hemorrhagic tendency,” undistinguishable from that associated with inflammation or cancer of the pancreas. The confidence of the authors in the power of calcium chloride to prevent such hemorrhage is, of course, not altogether unfounded, but it seems hardly justifiable to say without qualification: “The tendency to hemorrhage, both at operation and after, can be successfully counteracted by the administration of calcium chloride, in 30-grain doses, thrice daily, for from twenty-four to forty-eight hours before operation, and by enema, in 30-grain doses, twice daily for forty-eight hours afterward.”

Deep jaundice with a distended gall-

Bladder is properly referred in many instances to malignant disease of the head of the penis. Emaciation, if rapid and marked, is universally recognized as a ~~significant symptom~~. It seems medieval, ~~however, to write of a patient having lost~~ "his weight like powder." To say nothing of the ~~inadequacy of the idea~~ "thirty-three pounds" ~~weight of the world has~~ and would ~~be the same to Americans as well as to~~ ~~the rest of the world~~.

[illegible]

The number of pages is indicated in the margin.

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plied to one of us by others regarding cases examined for them confirms our opinion of the clinical value of the test."

This is saying much, and there scarcely seems need to remark, as they do in the preface: "We do not consider that at present we are in a position to make more positive statements." They say there also, however, that in their own practice they never rely upon the "pancreatic" reaction alone in making a diagnosis of pancreatitis or malignant disease of the pancreas, but always take into account the results of a complete analysis of the urine and a chemical examination of the feces, as well as the clinical symptoms. The fact that other observers have failed to corroborate their experiences with this test makes the profession cautious as to its acceptance, but there can be no reason for not trying it simply in every doubtful case, keeping in mind the original statement of the authors that the reaction that they claim is to be pathognomonic in a majority of cases.

[illegible]

一、“道”：指自然规律、宇宙本源。老子认为“道”是万物之母，是永恒不变的。

二、“德”：指事物所具有的品质、属性。是“道”在万物中的体现。

三、“仁”：指人与人之间的关爱、同情心。是“德”的一种表现。

四、“义”：指行为准则、道德规范。是“德”的一种表现。

五、“礼”：指社会制度、礼仪规范。是“德”的一种表现。

六、“智”：指智慧、知识。是“德”的一种表现。

七、“信”：指诚信、信用。是“德”的一种表现。

八、“忠”：指忠诚、尽心竭力。是“德”的一种表现。

九、“孝”：指孝顺父母。是“德”的一种表现。

十、“悌”：指尊敬兄长。是“德”的一种表现。

[illegible]

epithelioma, once for sarcoma, and eighteen times for benign tumors (Mauclaire: *Archives Générales de Chir.*, 1907).

It will doubtless surprise many general practitioners inclined to take the old hopeless view of affections of the pancreas to read that of one hundred and two operations undertaken in patients in whom chronic pancreatic trouble constituted the chief disease, or in whom it formed a serious complication of other diseases, 96.1 per cent of cases were followed by recovery, giving a mortality of 3.9 per cent, and that since compiling the foregoing figures, in 1904, the authors' experience has very largely increased, and the mortality has diminished to a little over 2 per cent. Of course, similar percentages of cure do not follow in the acute or the suppurative cases, and not much is to be expected in malignant ones; but there can be no doubt that prompt operative interference in all suspected cases with direct incision and drainage, when indicated, or gall-bladder drainage in the majority of the subacute and chronic cases, will result in the recovery of a considerable proportion. The teachings of the book in these respects are sound, though perhaps somewhat too conservative. On the whole it can be most cordially recommended to both the practitioner of medicine and the surgeon, as a helpful and reliable guide in the many obscure conditions of the upper abdomen in which the pancreas is, or is suspected to be, involved.

THE TREATMENT OF FRACTURES. With Notes upon a Few Common Dislocations. By Charles Locke Scudder, M.D. Sixth Edition, Thoroughly Revised and Enlarged. Illustrated. W. B. Saunders Company, Philadelphia and London, 1907.

The sixth edition of Scudder's work, which has now become the recognized textbook on this subject, will be hailed with delight by surgeons, who, occupied in many directions, have been unable to keep abreast of the progress made in this branch of surgery, and who would be guided in their treatment by the authoritative statements of one thoroughly familiar with modern literature and widely experienced in practical treatment.

The first chapter is devoted to fractures of

the skull, and from the standpoint of the hospital interne covers the subject well. Fractures of the bones of the face follow in order. An ingenious splint is depicted for remedying deformities incident to fracture of the nasal bone. The use of fixation pins is not mentioned. In fracture of the lower jaw the interdental splint receives careful description and just recognition.

In discussing the question of operation for fracture of the vertebræ Scudder states that in partial lesions operation may be demanded; in fracture of the laminae and spines operation is demanded; in all lesions of the cauda equina operation is demanded; in almost all complete lesions operation may be done with the hope of doing some little good.

Condylar and supracondylar humeral fractures are treated in the acutely flexed position, the arm being inspected daily for the first week. To Colles's fracture is accorded the careful consideration to which the frequency of this injury entitles it. In discussing fracture of the hip Scudder gives a number of methods, among them that of Whitman, by abduction, but fails to mention the admirable results achieved by Ruth as the result of combined longitudinal and lateral traction. Nor is space given to fractures of the astragalus and os calcis, which the comparative frequency of these injuries and their crippling effects would seem to justify.

There is a brief but very excellent summary of the anatomical facts concerning the epiphyses, beautifully illustrated. The summarizing of the Roentgen ray in its relation to fracture is admirable. The chapter devoted to plaster of Paris is likely to be serviceable even to those experienced in the use of this medium. The ambulatory treatment of fractures of the lower extremity is briefly considered. The book closes with some notes upon a few dislocations.

It is obvious that Scudder has not been carried away by the fashion of the moment which dictates the open method of treating all fractures which cannot be perfectly reduced; holding, and in this representing the most experienced men of the profession, that the vast majority of fractures can be

treated successfully by less dangerous methods. None the less he has given to surgical intervention due credit and has indicated clearly its indications and limitations.

He has written a book which is a safe guide to the student, is indispensable to the general practitioner, and is useful even to the surgeon with a general hospital service.

THE OPERATING ROOM AND THE PATIENT. By Russell S. Fowler, M.D. Second Edition, Revised and Enlarged. Philadelphia and London: W. B. Saunders Company, 1907.

This second edition of "The Operating Room and the Patient" covers a larger field than would be suggested by the title, since there are to be found among the chapter headings "The Instrument and Supply Room," "Anesthesia," "General Considerations," "Course of Aseptic Wounds," and "Lists of Instruments and Dressings Commonly Employed."

The book is written in a dogmatic style, as expressing the settled convictions of the writer. It is quite certain that some of the views thus expressed are not capable of general application, nor are they commonly accepted as sound.

Thus, the author advises that chloroform and ether should be poured into blue glass bottles and a reserve supply should be kept in original packages. It is happily now almost the universal custom to order ether in quarter-pound cans and to administer it directly from these packages by the drop method. The inhaler depicted by the author, or modifications of it, have been generally abandoned.

Ethyl bromide is so little used because of its danger that it seems unwise to give it the serious consideration which it receives in this work. For the same reason it seems unwise to devote nearly as much space to spinal analgesia as is considered adequate for etherization.

The futile addition of morphine to a cocaine mixture advised for local infiltration is still countenanced.

It seems a gratuitous magnification of discomfort to subject a patient entering the hospital to a scrubbing with soap-suds and a soft brush of the head, axillæ, genitals,

anal region, hands and feet, and cutting short his finger-nails and toe-nails and cleaning his subungual spaces, when perchance the intervention required is simply the removal of a birthmark.

It is a relief to find that the author specifically states that the eyebrows should not be shaved, though he holds that in operations involving the mouth or nose the beard and mustache should be removed.

Excellent illustrations are given of the position of the patient which most facilitates the work of the operator, though the extension of the arms above the head as figured in the cuts is to be avoided when this is practicable.

Under the title "General Considerations for Treatment" there is given an interesting section on the appearance of the patient, Fowler stating that to the experienced eye this is of great value. He holds that when the "facial expression is content and the patient welcomes the surgeon with a smile" the case need occasion no anxiety, and notes that in distention the countenance may be somewhat troubled, whilst "in the early stages of anuria there is a peculiar glitter of the eye and a suffusion of the face which to him of clinical experience is most significant."

The author particularly cautions against the use of morphine, even though there be pain, if the drug can possibly be avoided, especially dreading it in laparotomy cases.

As representing the practices and beliefs of a single hospital this book is of extreme interest to every operative surgeon, nor can one read it without thoroughly agreeing with the major part of its teaching.

A TEXT-BOOK OF PRACTICAL GYNECOLOGY FOR PRACTITIONERS AND STUDENTS. By D. Tod Gilliam, M.D. Second, Revised Edition. Illustrated. F. A. Davis Co., Philadelphia, 1907.

The second edition of this work exhibits no cardinal departure from the scheme of the original book. It has been carefully revised, sets forth with great clearness modern modifications in technique, and has appended an index of regional symptoms which is distinctly valuable and which could with advantage be made much more comprehensible. The book ends with a small

section on Diseases of the Rectum that cannot be considered either comprehensive or modern.

The section devoted to Diseases of the Urethra and Bladder is much more satisfactory.

The major portion of the book, devoted to practical gynecology, is a clear and concise exposition of the current practices in this branch of surgery.

SURGICAL APPLIED ANATOMY. By Sir Frederick Treves. Fifth Edition. Revised by Arthur Keith, M.D., F.R.C.S. Illustrated. Lea Bros. & Co., Philadelphia, 1907.

This book, originally published in 1883, became almost immediately the most popular and useful work on this subject in the English language. Since then it has passed through several editions, of which the fifth, revised and modernized by Arthur Keith, is now under review.

In the first chapter, devoted to the scalp, Keith has inserted an excellent summary on trephining for meningeal hemorrhage, cere-

bral abscess, and cerebral tumor. It is interesting to note that in spite of the enormous literature on the subject the teaching in regard to the mechanism of fracture remains unchanged from that of the first edition, nor does even a small paragraph upon craniectomy seem desirable in view of the practically universal abandonment of this seemingly futile procedure.

In the chapter devoted to the cranial bones there is a just appreciation of the importance of the subarachnoid space. In considering the surface relations of the brain the text of former editions of the work is materially changed, the method of localization being extremely simple, though perhaps not that generally practiced by operating surgeons.

Throughout the work there is found the evidence of a conservative, learned, and conscientious revision, one which, while not fundamentally altering the book, makes it serviceable both to the student and the practitioner.

CORRESPONDENCE.

LONDON LETTER.

BY G. F. STILL, M.A., M.D.

The whole scholastic portion of the medical world in London—that is to say, the staffs of all our great hospitals and medical schools—has been absorbed in one topic of burning interest during the past month, namely, the election of a representative of the medical faculty on the Senate of the University of London. In the usual order of things such an event would have stirred up only the most languid interest, but on this occasion it was understood that a great principle was at stake, which I must explain in brief. During the past two or three years there has been an effort to concentrate the teaching of the preliminary subjects of the medical curriculum at certain centers so as to leave the hospitals free to expend their energies on clinical teaching. At first all went well; it

seemed as if all would agree; King's College and University College were to be two of the centers, and a third was to be built at South Kensington, for which funds were collected and a site promised—a matter of several thousands of pounds. After going thus far petty jealousies arose; several of the hospitals drew back, and changing their policy refused to give up the teaching of the early subjects. But by this time some hospitals had already taken the step and ceased to teach these subjects, notably St. George's Hospital, which relied upon the third center at Kensington for its students in the future, consenting in the meantime to allow them to go to King's College or University College for these early studies. The Senate of the University of London, after collecting funds and securing the site, finds that there is now no need for a third center, and proposes either to restore funds and site to those who had given them, or to

build an institution to be used for research work.

Now comes the tug of war. St. George's Hospital declares that it gave up the earlier part of the curriculum on the definite understanding that a third center should be built; the principal of the University of London, Sir Arthur Rücker, repudiates any such promise. Three candidates appear in the field to contest the election, which would give them a voice in the Senate: Professor Starling, the well-known physiologist, upholding the original idea of having a third center; Dr. Norman Moore, of St. Bartholomew's Hospital, supporting the proposal that the funds and site should be used to build an institute for research; and Mr. F. C. Wallis, of Charing Cross Hospital, upholding the same view, but contending that there is no sufficient surgical representation on the Senate, and therefore putting himself forward as a candidate. The electors have been inundated with circulars and addresses and counter-manifestoes by the rival candidates for several weeks. The possibility of a third center seemed to be hanging in the balance, and St. George's Hospital pressed its grievance, whilst others talked of the research institute as a "diversion of funds." At last the day of decision came: at the first ballot Professor Starling headed the poll, but he had less than half the total number of votes, so a second ballot was taken between him and the nearest candidate, Dr. Norman Moore. The result was an easy victory for Professor Starling. It now transpires that the site has already been restored to the donor, and the money offered back to those who gave. The whole proceeding reminds one of Lewis Carroll's "Hunting of the Snark," when after a lengthy trial the pig had been sentenced to transportation for life, "the jailer informed them with tears such a sentence would have not the slightest effect, as the pig had been dead for some years."

At a recent meeting of the Medical Society, which is one of the very few societies remaining unabsorbed by the Royal Society of Medicine, some cases of unusual interest were shown. Dr. Poynton exhibited

a boy of four years with the genital development of an adult, and with a big adult voice which sounded extremely ludicrous coming from a young child. The child was big for his age, but not extremely obese, as some of these cases of precocious development become. It is well known now that this condition is associated with disease in the suprarenals, but no tumor could be felt in this boy. Dr. Savill showed a boy of sixteen years who had developed symptoms of locomotor ataxia since the age of fourteen years; his father had syphilis, but the boy showed no other evidence of syphilis. Very few instances have been recorded of locomotor ataxia at so early an age. A case was also shown of the so-called cleidocranial dysostosis—a boy of six years with a very large open fontanel and absence of the outer part of both clavicles.

The Royal Society of Medicine celebrated its own birth by a great dinner at the Hotel Cecil on December 3, when Sir William Church, the famous President of the Royal College of Physicians, who was one of the prime movers in the formation of this amalgamated society, took the chair. Considerable doubts were entertained in some quarters at first as to the financial possibility of the scheme, but so great has been the rush of candidates for the fellowship of the society, which entails the largest subscription, that it has been necessary to simplify the entrance so that a great part of the meetings may not be occupied in the election and admission of new fellows.

The undergraduates of Oxford and Cambridge have a traditional reputation for rowdyism upon occasions, but the London medical student can also distinguish himself in this way when opportunity offers. Recently a band of medical students proceeded to Battersea, a part of London which has made itself notorious as the abode of socialism, radicalism, and fanaticism of various kinds, and attempted to demolish what is known as "Battersea's brown dog." A short time ago the Borough Council of Battersea positively sanctioned the erection of a monumental tablet to the memory of a brown dog, which the monument states was

"done to death in the laboratories of University College," and the mayor of Battersea degraded his office by unveiling this scandalous erection. These modern representatives of Bob Sawyer, being indignant at the insult to medical science, took the law into their own hands and attempted to ruin the monument with a hammer; but their intentions were frustrated by the police, who arrested several of them, with the result that they were heavily fined and threatened with imprisonment if such an attempt were made again. Probably every true scientist will sympathize with the indignant disgust of these youths at the contemptible action of the Battersea mayor and council in allowing the antivivisectionists to erect such a monument, but the dignity of our profession is not enhanced by such youthful folly. To-day some hundreds of students marched through some of the main thoroughfares to the Strand, where they burned an effigy of the magistrate who had threatened their fellow-students with imprisonment.

It is announced that Mr. Andrew Clark, or rather Dr. Andrew Clark, for on the occasion of the meeting of the British Medical Association at Oxford three years ago he received the honorary degree of Doctor of Science, is about to retire from the post of surgeon to the Middlesex Hospital, where he has also been for some years lecturer on surgery. He has been connected with this hospital nearly forty years.

The "trypsin treatment" of cancer has recently been again discredited. Seven cases of inoperable cancer were treated in London by this method, four at St. Mark's Hospital, three at Charing Cross Hospital; it is stated that not one of the cases showed the least benefit from the treatment.

The greatest satisfaction has been given both to the medical profession and to Cambridge University by the recent honor bestowed by the king upon Prof. Clifford Allbutt, who on the king's birthday was made a Knight Commander of the Bath. Sir Thomas Clifford Allbutt, whose fame is known throughout the civilized world by the monumental work on medicine which bears his name, is respected by all who know

him personally. As Regius Professor of Physic in the University of Cambridge he has upheld the dignity of that office, and advanced medical teaching and research at Cambridge to no small degree; he proved indeed a worthy successor of Sir George Paget and those who preceded him in that distinguished position. The only London physician who was singled out for the honor of knighthood was Dr. W. H. Allchin, who is consulting physician to Westminster Hospital, and who has labored earnestly in the reorganizing of the University of London. He is, moreover, one of the Medical Consultative Board of the Admiralty. His *Manual of Medicine* has had a wide circulation, and he is a recognized authority on diseases of the digestive organs.

Sir Frederic Treves, who has been the recipient of much royal favor, has recently received from His Majesty a house in Richmond Park; it is very rare for the crown to bestow one of these residences upon a member of the medical profession.

The death of Lady Brampton, whose husband, Lord Brampton, was better known as Mr. Justice Hawkins, has brought a large legacy to the chief Roman Catholic Hospital of London, the Hospital of St. John and St. Elizabeth, which formerly stood in Great Ormond Street adjoining the famous Children's Hospital. A few years ago this Catholic hospital was quite a small institution; it has lately removed from central London to the suburbs, and with this legacy of £100,000 will no doubt become a large and imposing building.

The libel action, or rather the appeal against the former decision, in the case of a Dr. Dakhyl against the editor of *Truth* has lately excited public interest. *Truth* had described Dr. Dakhyl, who was connected with a certain Drouet Institute for the Treatment of Deafness, as a "quack." Dr. Dakhyl in an action for libel was awarded £1000 damages. *Truth* then appealed, and on this appeal the jury has just now reversed the decision in the former trial. It is evident from many of the lay journals and newspapers that the public as well as the medical profession in this country are

beginning to have some idea of the mischief done by quackery; but error dies hard, and patent medicines and humbug will continue to flourish in spite of any number of legal pronouncements.

PARIS LETTER.

BY R. H. TURNER, M.D. (PARIS).

In my last letter mention was made of a millionaire, named Soller, who had offered to give one million francs to the Assistance Publique, the great medical charity organization of Paris, if this were used to control the acts of the medical staff in the Paris hospitals. The Assistance Publique did not at first refuse the offer, but asked under what conditions this sum would be paid over, and finally required of him that he should make a donation. Soller has so far not shown any inclination to do so. On the other hand an inquiry was made into Soller's financial past, and it was found, according to the *Matin*, that he had been more or less of a peripatetic, wandering from one quarter of the city to the other, and forgetting, alas, to settle with his landlord before leaving! Moreover, he had been a company promoter, and the shares of the various companies he started finished by selling at five or ten centimes apiece. Still the daughter of Soller inherited a certain sum from her mother, a matter of 400,000 francs, so that when all accounts are squared it would seem that the family owns about 300,000 francs, hardly sufficient to allow them to give a million.

The bubonic plague has broken out in Oran and at Tunis, and dispatches show that there is a lack of serum. Interviewed on this subject by a reporter of the *Matin*, Dr. Dujardin-Beaumetz, who is charged with the preparation of this serum at the Pasteur Institute, replied that there were enormous quantities at Garches, a small place near Paris, where the horses used for making the serum are kept. This serum was used at Oporto in 1899 by Drs. Calmette and Salinebeni, and out of 142 patients treated only 21 died, a mortality of 14.78 per cent, whereas 72 patients that were not

treated showed a mortality of 63.72 per cent. Dr. Dujardin-Beaumetz stated that Yersin had obtained at Canton 24 cures out of 25 cases. At Nha-Tvang the mortality of his patients was only 42 per cent, whereas 39 others which were not treated all died. Indians do not seem to recover so readily, on account of their extreme susceptibility to bubonic plague.

There has been some disturbance at the Faculty of Medicine over the nomination of two new professors, Dr. Parent and Dr. Nicholas, who are respectively appointed to the chairs of histology and anatomy. Professor Debove, who is the dean of the Faculty, and who is not much favored by the students, has tried to find two men who would undertake this work and devote themselves exclusively to it, not having any practice outside to interfere with their professorship. He was obliged to ask two men from Lille and Nancy, as none of those in Paris would submit to these conditions. At the beginning of November, when these professors were about to give their inauguration addresses, the students made such an uproar that it was impossible for them to continue, and some of the medical students even went so far as to make a bonfire of the benches in the court of the school of medicine. The police were called in and the "manifestants," as they are called, were dispersed. As a punitive measure the dean decided to close the Faculty until the 1st of January, a few students, however, being allowed to pass their examinations, as in some instances they would be obliged to join the army in case they did not have their diplomas in time.

A subject of some importance from a hygienic point of view is that of the breeding of oysters near the outflow of sewage of certain towns in France, and there has been a good deal written on this matter during the last few months. It has at last been decided to prohibit the sale of oysters from certain beds where oysters have been grown, and then put elsewhere for several weeks, to remove all taint. There is no doubt that oysters play a certain rôle in infection, and in the writer's practice there

has been during the last two years one case of typhoid fever and one of acute catarrh of the bowels due almost surely to oysters eaten in a well-known restaurant. The new regulations will certainly help to prevent such unfortunate events.

It is a peculiar thing how much less typhoid fever is seen in Paris than in former days. I remember the number of cases I used to see in the hospitals, some of them most virulent, and now the mortality per week from typhoid fever is about seven—*i.e.*, 365 deaths a year for a population of close on three millions. There was a time, for instance in 1855, when there were 200 deaths a year per 100,000 inhabitants.

The ointment recommended by Metchnikoff as a preventive of syphilis is to be placed at the disposal of the soldiers in the French army. Immediately after the soldiers have joined their respective regiments, lectures will be made them by their officers as to the dangers of venereal diseases, and they will be instructed as to the means of avoiding infection by using a solution of permanganate of potassium and a calomel ointment. In every infirmary an ointment composed of one part of calomel for two parts of vaselin will be placed at their disposal, and they will be shown how to use it. This will always be preceded by an injection and wash of a 1-in-5000 solution of permanganate of potash. Statistics will be established to show the efficacy of these precautions.

Professor Debove's term as dean of the Faculty expired on the 21st of November, and he refused to continue. A meeting of the professors of the Faculty took place on that date, and Professor Landouzy was elected by 57 votes out of 63. Professor Landouzy, who is the son of a well-known physician of Reims, has been successively professor of therapeutics, of internal medicine, and lastly of clinical medicine. He is much appreciated by his colleagues, and is known for the interest he has taken in the treatment and prevention of tuberculosis.

At a recent meeting of the Society of Surgery, held on the 15th of November, the use of electrargol or collargol in men-

ingitis was discussed. Dr. Paul-Laurens presented a case of a patient suffering from acute septic meningitis due to ear trouble, caused by the enterococcus. On cleaning off the cephalorachidian liquid deformed polynuclears were found. Fifteen to twenty cubic centimeters of the liquid was drawn off daily, and five cubic centimeters injected. Dr. Widai has also published a case of cure of a serious form of cerebrospinal meningitis where five centigrammes of collargol was injected into the arachnoid space. Dr. de Massary also cited a case of meningitis in which there were no germs, but abundant polynuclears, the latter, however, being intact. In such cases, however, no injection should be made, as it would increase the reaction. Other cases were also cited by Drs. Mosny and Sacquégrée; and Dr. Lermoyez, the celebrated ear specialist, remarked that the subarachnoid injection is preferable to the intravenous on account of the rapidity with which it acts.

Professor Chantemesse has again drawn the attention of the medical public to the results he has obtained by using his typhoid fever serum, and in his report at the Berlin Congress of Hygiene he dwelt on the notable diminution of mortality he has obtained. During the last six years 5621 cases of typhoid fever have been treated in the Paris hospitals, and the mortality was 17 per cent. During the same number of years Dr. Chantemesse has treated at the Bastion 29 one thousand cases, and he has only lost forty-three, which makes a mortality of 4.3 per cent. The treatment was the same with the exception of the serum.

Two other physicians, Drs. Brunon and Josias, have also used this serum, and as a result Brunon has only had 3 deaths in 100 cases, and Josias 8 deaths in 200 cases. At the military hospital of the Val de Grace the mortality was 10 per cent until the serum treatment was tried, when it fell to a little over 5 per cent. Dr. Chantemesse insisted on the importance of making an early diagnosis, and for this he has found that there exists an ophthalmo-reaction parallel to that employed in tuberculosis.

Dr. Chantemesse indicates how the dry toxin should be prepared and employed, and gives the results he has obtained. Fifty persons convalescing from various diseases were experimented on; in but one case was there any reaction, and that only for a few hours. This was due to the patient, who was tuberculous, having probably had typhoid two years before. Seventy patients suffering from typhoid fever, diagnosed with the sero-diagnosis of Widal, also reacted to the ophthalmic test, and this reaction often preceded the first test. No ill effects are to be feared from this method of diagnosis. After indicating his method for preparing the serum, Dr. Chantemesse stated that the good effects of the serum were undoubtedly due to the hyperactivity of the lymphoid bodies (spleen, etc.), which is accompanied by an increase in the opsonic index. Moderation should be exercised in the dose of serum employed, as it would not be well to produce too great a destruction of the germs, as the consequent resorption of a large dose of toxins might be disadvantageous.

TREATMENT OF TUBERCULAR OSTEITIS OF THE TIBIA BY IODINE AND CREOSOTE.

To the Editors of the THERAPEUTIC GAZETTE.

SIRS: During the past few years I have pursued a particular method of treatment in tubercular osteitis of the tibia with such satisfactory results that I submit the brief notes of a recent case in illustration. It is understood that where there is a sequestrum its removal would be a necessary preliminary.

L. Q., a native of Cebu, was occupying a hammock in the house of a relative when I was called to see him, in November, 1906. He had been unable to do anything toward his support for more than a year, and was completely helpless and destitute, except for some rice which his wife brought to him for his daily food. His right leg from the knee down was much changed by emaciation of the soft parts and by edema of the foot and ankle. The knee and ankle were both stiff. The skin was glossy, where it

was not covered with dermic scales and dried pus. There were five sinuses between the knee and the ankle, leading down to diseased bone. His general condition was very poor, he was weak and emaciated, and was absolutely dependent upon his relatives. He was admitted to the Post Hospital at Gandara, where I undertook the task of attempting to reestablish his wage-earning abilities. Immediately after admission, the sinuses, which ran from every direction into the tibia, were freely opened and flooded with normal salt solution. No curetting was done, except with the finger during the irrigation. He was given internally ten drops of the compound tincture of iodine, well diluted with hot water, three times daily before meals, and he was put on the regular hospital fare for a station in the field. Locally an irrigation with Lugol's solution in normal salt solution (three per cent) was ordered to be given daily. This was followed by an injection into the sinuses of a mixture of creosote and cottonseed oil, and this was also applied on the dressings. The strength of the creosote mixture was at first one in two hundred, which was injected every day for a week, then the intervals were increased and also the strength, until he received an emulsion of one in sixty, given once a week. No splint or cast was applied; but he was encouraged to frequently move the affected joints. At the end of six weeks he left the hospital walking with a cane. He subsequently returned for dressings once a week for about a month, when he sent word that he was so busy planting rice and hemp that he could not very well come any more, and hoped I would excuse him. At the last reports he was still well and busy, and has had no more trouble with his leg, which I presume has entirely healed. Incidentally I might mention that one of the results of his stay in the hospital was that he gained while under treatment about thirty pounds in weight. When last seen he had no signs whatever of tuberculosis.

FRANK T. WOODBURY, M.D.,

Captain and Assistant Surgeon, U. S. Army.

Gandara Post Hospital, Samar, Philippine Islands, August, 1907.

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ORIGINAL COMMUNICATIONS.

INJURIES TO THE HEAD AND FACE.¹

BY WALTER LATHROP, M.D.,

Surgeon and Superintendent State Hospital, Hazleton, Pa.; Surgeon Pennsylvania R. R. and Lehigh Valley R. R.

In choosing a subject to present to this association, where so many varied and able papers are read, and where it is a problem to know what to discuss, I was helped out of the dilemma by our able secretary, and for a few minutes I will make some remarks on injuries to the head and face. Living in a locality where mines, railroads, and workshops add their portion to the accidents of every-day life, and where falls of rock or coal, or the premature blast in the former, which usually outnumber the other two, it has fallen to me to treat a fairly large number of injured people during the past few years.

In considering injuries to the head, I have taken up the most serious first, namely, fractures of the skull. Asepsis and antisepsis have made wonderful changes in the treatment of these conditions, and many cases that were formerly hopeless are now restored to health. My own experience has been derived from 143 cases of fractured skull, ranging from simple fissured to compound, depressed, and comminuted, and in addition to these there were 45 cases of concussion of the brain, or 188 in all of these head injuries. Fractures of the vault usually differ from those of other localities. They are generally caused by direct violence, and the fracture, if fissured, may extend to a considerable distance from the

point of direct injury. Usually the inner table is broken over a greater area than the outer, and in an apparent slight fracture externally the dura may be torn by the injury to the inner plate. Depression of the bone is caused most frequently by a hard blow, concentrated over a small area, or by a fall on some projection. In severe or crushing injuries, such as seen in railway cases, the bones may be embedded in the brain, the inner table may be greatly comminuted, and yet the dura show wonderful resisting power. We will have often a subdural hemorrhage followed by symptoms of compression from a clot. We may have compression, tearing of the meninges or the brain itself—the fragments themselves may cause compression by the force of impaction. The compression is more pronounced where hemorrhage is the cause than from depression of the bone, as would be seen in cases in which unconsciousness was not immediate but came on slowly. Fractures of the anterior part of the cranium frequently involve the orbit, and those of the base often radiate from the vault, or involve primarily the middle and posterior fossa.

In all injuries to the skull, damage to the brain is of first importance. It is not the mere breaking of the cranial bones that is so serious, but the immediate or remote effect on the brain itself, either manifested by hemiplegia, loss of special senses, complete coma, or convulsions. These lesions

¹Read at the meeting of N. Y. & N. E. Railway Surgeons, Academy of Medicine, New York City, November 14, 1907.

are further important owing to the fact that the scalp may be uninjured, and these cases require careful consideration and close observation. Immediate damage may be caused by pressure of bony fragments, while later pressure may be due to an injured vessel whose leakage will be manifested by some of the symptoms already mentioned. The question as to which is most dangerous, pressure from depressed bone, or that due to a bleeding vessel, is answered by saying that *hemorrhage is the most serious*. When the scalp is torn, examination and diagnosis of fracture can usually be made with little difficulty, but in cases of head injury where the scalp is intact, and there is the slightest reason to suspect deeper trouble, my practice is to make a free incision, under careful asepsis, over the suspected region, inspect the cranium, and discover if possible the fracture, usually a fissured one. We may, however, find nothing, and the patient show or develop symptoms of brain injury. In these cases it is *best* to wait a few hours, and endeavor to ~~restore~~ restore the mental condition by means of quiet, ice, etc. We should avoid drugs that increase the flow or strength of the circulation, for we may be dealing with a cerebral hemorrhage, and thus add to the trouble.

Should no change occur after a reasonable time, and the symptoms increase in severity, we are justified in trephining, and endeavor to ascertain and remove the cause. I had one case in which a man was struck upon the parietal region; he was perfectly conscious, and showed no evidence of serious injury to the brain. He was treated expectantly; some thirty-six hours later he began to show signs of stupor, which rapidly progressed to unconsciousness. I opened the skull over the meningeal artery and found a large clot. This was removed by irrigation and careful separation, and the vessel ligated; a small gauze drain was inserted, and the wound closed. The patient recovered rapidly and left the hospital a well man. I have seen six cases in which the superior longitudinal sinus was injured,

hemorrhage being very free as soon as the depressed bone was raised. This bleeding can usually be controlled by thoroughly packing with gauze, sometimes by ligature, or by the method of Morris, which, however, would take considerable time.

In one very severe fracture of the temporal bone a vessel in the mastoid portion leading to the lateral sinus was injured, and gave much trouble by persistent bleeding. The opening was enlarged, the wound packed, and aside from deafness the patient recovered from a very bad fracture.

In considering injuries to the base we have a class far more serious than any mentioned. The injury to the cranial contents is greater, while very vital centers are involved. Again, these fractures may and do extend into parts that cannot be reached or operated upon with any success; they are frequently hard to clean and drain, and as a rule are fatal. According to a high authority 85 per cent of basic fractures originate in the vault, and are caused by an extension of a linear fracture of the vault to the base. The symptoms as a rule are marked: hemorrhage from the nose and ear and even mouth and eyes; escape of cerebrospinal fluid is usually present, especially from the ear, or from the wound itself. The treatment of basic fractures is nearly always expectant; *drainage should be provided where possible*, as it is most helpful. Careful cleansing and disinfecting of the ear and nostrils is of value, and a light gauze drain should be inserted in the affected ear, as well as the nostrils. Strychnine is valuable as a respiratory stimulant, and opium is useful to quiet the patient where there is much restlessness. When the fracture is marked, and external, such as involving the temporal bone, the pieces should be elevated and removed, if indicated; *scrupulous cleanliness* being observed. In speaking of trephining I refer to the use of chisel, mallet, and rongeur forceps, the actual trephine being seldom used, save in suspected cases of hemorrhage, without depression, or marked fracture.

As the time is limited, I will not dwell

much more on a subject familiar to most of the surgeons present, beyond saying that I believe the general treatment of fracture of the skull, whether compound, depressed, or comminuted, *should be by operation*. In simple fractures where the slightest indication of intracranial pressure or hemorrhage is present, *operate*. The prognosis in fractured skull should be guarded, and guided by subsequent developments. A subnormal temperature followed by a rapid rise is a bad indication. Coma, deep, irregular breathing, and dilated pupils are nearly always of fatal significance. A temperature at or above normal, rising one or two degrees, with regular respiration and full or slightly accelerated pulse, is usually favorable. We sometimes have to decide between concussion, contusion, apoplexy, and uremic coma. The difference between the first three is only in the degree of intensity, and may sometimes be decided by symptoms indicating definite injury to some portion of the brain. As to uremia, an examination of the urine will usually clear up the case.

In speaking of concussion of the brain we must remember that it varies greatly in the degrees of severity. In an ordinary case the pulse is slow, the rate being from forty-eight to sixty beats per minute. Respiration is lessened in frequency, and the temperature is usually slightly below normal. The patient on waking is dazed, and frequently has but little speech or motion. A condition of dizziness, weakness of muscles, and headache may persist for some days in ordinary cases of concussion. A severe case of this condition presents an entirely different picture. Unconsciousness may persist for several days, the patient lying in a comatose state, paralysis complete, breathing shallow, face pale and cool, pulse slow, irregular, and weak. Improvement shows itself by change in pulse, rising of temperature, deeper respiration, and movements of limbs. The pulse-rate usually remains slow for some time after all serious symptoms have subsided, and with its gradual return to normal the dizzi-

ness, headache, etc., are relieved. Vomiting frequently occurs before improvement takes place, and is a very good sign in prognosis. It is well to remember that if symptoms of irritation develop, or spasms of groups of muscles, or the depression grows deeper and becomes profound, we have no longer an ordinary concussion, but brain lesion as well, and where there is at first consciousness, followed by general paralysis and unconsciousness, we have nearly always a *rupture of the middle meningeal artery or one of its branches*. The treatment of these cases is familiar to you all and will not be dwelt upon here.

In regard to the mortality in my own cases, fractures of the base proved most fatal, there being 26 cases, with 18 deaths. In 117 cases of fracture of the skull, exclusive of those mentioned, there were 22 deaths, while in 45 cases of concussion of the brain there were four deaths.

Fractures of the Bones of the Face.—A series of injuries to the face involves fracture of the nasal bones and of the superior and inferior maxilla. Of these there were 37 of the nose, nearly all compound; 13 simple and two compound of the superior maxilla, and three simple and 18 compound of the inferior maxilla. These injuries were usually due to direct force, from railway accident, premature blast, or fall of rock. The treatment pursued in the nasal fractures was thorough cleansing of the nares, checking of hemorrhage by ligature or suture, elevation of fragments by pressure from within the nose, and careful packing of both nostrils with sterile gauze. The outer dressing is usually gauze held in place by adhesive plaster, though in some cases we use a splint of tin, molded over the nose to protect it, and fastened across the forehead.

Fracture of the superior maxilla, unless very marked and depressed, can be treated expectantly, and with good results. When the bone can be moved by pressure from within the mouth, it should be put in the best position possible. When compound, the bone should be elevated, if it can be

done without great force, and the wound closed, with or without drainage as indicated, while use of the jaws should of course be prohibited.

In fractures of the inferior maxilla my invariable practice is to *wire the bones*. Sometimes the teeth may be utilized, and wire passed between them, on either side of the fracture, and then twisted; when this is done we should pass the wire at least two teeth beyond the fracture on each side. The best results when the teeth are used to hold the wire are in fractures involving the symphysis.

In regard to the use of interdental splints, my experience has been most unsatisfactory, and the *very best results* have been gotten by *wiring the bones*, and applying the ordinary roller bandage to head and jaw; ordinary copper wire is used, similar in size to No. 23, silver. The mouth should be carefully disinfected daily, and the patient given a wash to use at frequent intervals. The wire can usually be removed in three to four weeks, and the results are uniformly excellent.

The next and last as well as most common class of injuries to the head and face

are wounds, usually lacerated, incised, or contused. Of these I have records of 691 sufficiently severe to merit mention here. The majority involved the scalp, there being 405 lacerated and 59 incised. The balance were 142 lacerated wounds of the face and 38 incised. There were 47 very severe contused wounds involving the eye or its immediate vicinity.

The treatment of all lacerations was by thorough cleansing, under anesthesia if necessary, trimming torn edges when practicable, checking all hemorrhage, and careful suturing of the wound. Frequently a small gauze drain was used. The incised wounds were made as aseptic as possible and closed without drainage.

Contused areas, when distended by blood, are freely opened and drainage inserted. A cold compress or ice-bag is the chief method of rapid cure in all contusions, whether simple or severe, where the eye or its tissues are involved.

I realize that this paper is somewhat rambling and incomplete, but I have tried to keep within a space of time as brief as possible, and yet refer to the more important injuries to the head and face.

THE TREATMENT OF ACNE VULGARIS.¹

BY DR. SUTTON,

First Assistant in Dermatology, University Medical College, Kansas City, Mo.

Acne vulgaris is an inflammatory disease, usually chronic, involving the sebaceous follicles, characterized by lesions varying from papules and nodules to pustules, usually associated with comedones.

Clinically, acne may be divided into acne simplex, in which the lesions are superficial, and acne indurata, in which the deeper layers of the corium are involved. Cases are found presenting all degrees between these two types.

In a typical case of acne simplex there is found a number (from 30 to 50) of super-

ficial papules, each usually having a comedone, or blackhead, in the apex. Some may be advanced a trifle beyond this stage, and contain a drop of yellow, purulent matter.

The pustules are sometimes so near the surface that they rupture on slight friction or pressure. Often there is an associated oily, seborrheic discharge from the neighboring glands which gives the skin a thick, greasy, dirty look.

In the indurated type the condition is complicated by the presence of a deep-seated inflammation of a rather indolent character. As a result of the thickening and cicatricial contraction beneath the outer

¹ Read before the Clay County Medical Society, at Kearney, Mo., Oct. 28, 1907.

layers the surface is liable to become rough and nodular. The various pus organisms, always present in the epidermis, penetrate and infect the sebaceous glands, with the ultimate formation of abscesses.

The canals leading to the surface become partially or wholly obliterated, and the suppurating sac is cut off from the external opening.

Histologically, the beginning abscess is surrounded by a mass of granulomatous cell forms in which may be found connective tissue spindles, plasma cells, and chorioplaques. In old cases these give rise to the nodular appearance so often encountered, and account for the difficulty experienced in successfully incising the unsightly lesions for the withdrawal of pus.

The scars are usually circular or oval, cone-shaped depressions, somewhat resembling those left by a mild attack of variola.

Of the regions affected, the face is most frequently involved, the forehead seldom escaping. Next, the interscapular space, and occasionally the chest.

The duration of an individual lesion is comparatively short, seldom longer than a week, but new ones are constantly springing up on neighboring surfaces. The subjective symptoms are slight, if one omits the mental anguish which these patients usually undergo. When deep abscesses are present there is, of course, resulting pain and tenderness, but these readily disappear when the pus is evacuated.

Acne is a disease of early adult life, appearing at the time of puberty and often persisting to the twenty-fourth or twenty-fifth year. The cases seen where it has appeared in later life are usually directly traceable to some digestive error or pronounced physical disorder.

Dilatation of the stomach may be a factor; the presence of a fermentative dyspepsia is considered of etiologic significance by some; anemia, constipation, uterine disorders, or the use of alcohol occasionally aid in its causation.

It has been claimed that masturbation and various sexual excesses and indiscre-

tions are important elements. In my opinion their influence is practically *nil*.

No social class is exempt from this disease.

Of the external factors, living in a dirty, dusty atmosphere and the too infrequent use of soap and water head the list.

The comedone, which, according to Unna and Sabouraud, is due to the conjoint action of two bacteria, the microbacillus and the staphylococcus albus butyricus, usually precedes the acne lesion.

Supplementary elements are an atonic, sluggish condition of the skin and the hyperactivity of the pilosebaceous glands which occurs during the developmental period of adolescence.

Following the formation of the comedone, either as a result of the irritation or from infection with a specific organism (the bacillus acnes of Gilchrist), we have a sluggish inflammation and its associated symptoms.

Gilchrist claims that the anemia, constipation, and other manifestations of general ill-health are a result of the absorption of toxins excreted by his bacillus, and have no bearing whatever on the etiology of the disease.

Acne vulgaris is to be differentiated from the drug eruptions, papulopustular syphilis, and variola. The history, age of the patient, temperature, condition of the glands and mucous surfaces, and the distribution of the eruption make the diagnosis easy, as a rule.

In this paper I have dealt only with acne vulgaris, and will not touch on the artificial acnes, those due to chemicals or external irritants, acne varioloformis, the acne urticata of Kaposi, or the acne keratosa of Jamieson and Crocker.

The prognosis is generally favorable, the time required to being about a cure varying from four or five weeks to as many months.

There are few skin diseases in which it is more important to employ both systemic and local treatment if permanent results are to be obtained. Each case must be carefully studied and all possible etiologic factors considered. Oftentimes a speedy, and

seemingly miraculous, cure will result from the correction of some simple dietetic error.

Exercise, especially in the open air, cold baths—if the patient is not of too nervous a temperament, otherwise lukewarm sponging, followed by a brisk rub—a simple, nutritious diet, and the interdiction of alcoholic and other stimulants, are all of importance.

I usually give my patients a diet sheet, containing a list of the articles they may and may not eat.

Greasy and fried foods of all kinds, gravies, cheese, pastries, hot breads, sweets (especially candy), pickles, ice water, and excessive amounts of tea, coffee, and cocoa must be avoided.

Inasmuch as constipation is often an important causative factor it may be combated by the use of Graham, corn, or whole-wheat bread, shredded wheat biscuit, or moderate amounts of those vegetables which leave considerable débris in the alimentary canal.

Starchy foods are to be condemned, as a rule, and if taken they must be well masticated in order to get the full effect of the saliva.

The bitter tonics, especially *nux vomica* and gentian, are often valuable.

Too much stress cannot be placed on the importance of a thorough general examination and the consequent correction of any pathologic condition which may be discovered. In young girls, or in those cases in which the utero-ovarian system is not properly performing its functions, I have found the administration of small doses of ovarian extract markedly beneficial. The dose is two grains, in capsule, twice daily, for one week. Then discontinue for a week and repeat.

In female patients, if the menstrual flow is slight, or accompanied by much pain, one of the viburnum preparations may be exhibited to advantage. If anemia is present, iron and arsenic, alone or together, are to be employed, care being taken not to disturb the digestive tract. In nearly all cases ichthalbin, the albuminate of ichthyol, five

to ten grains, in tablet form, after meals, is beneficial. It relieves the congestion as effectually as the parent drug and is less liable to prove disagreeable to the patient.

The vaccine treatment of Wright, whereby the phagocytic action of the leucocytes is relatively increased—either by stimulation of the white corpuscles or from an inhibitory action on the infecting micro-organisms—has a brilliant future, but is scarcely beyond the experimental stage as yet. The question of dosage is so variable, because of the instability of the opsonic index, which is used as a gauge, and the determination of the latter so complicated and subject to error, that much work remains to be done before the method can be adopted for every-day practice.

In those types of acne in which the skin is dry and the glands inactive, arsenic sulphide, gr. 1/67, after each meal, is good, both as a stimulant and alterative.

The comedones should be expressed each day, if possible, Piffard's instrument, having a circular eyelet, with a smooth, flat edge, being the best for the purpose. The use of the finger-nail or the old-fashioned watch-key is mentioned only to be condemned.

Of the external applications, lotions are the cleanest and most pleasant to use. In the milder types I have found the following time-tried prescription extremely satisfactory:

℞ Zinc sulphate, gr. xxx;
Sulphur, precipitated,
Potash, sulphuretted, ää dr. j;
Water, enough to make, oz. iv.

Dispense in a dark bottle. Care must be taken that the sulphuretted potash is fresh and not dried out. The mixture is to be well shaken and applied with a cotton swab, night and morning.

In the more severe types all three of the active ingredients may be increased. The effect is stimulating, astringent, and antiseptic. The superficial inflammation which is set up is carried to the stage of slight exfoliation; then a soothing remedy (I have

found the ordinary rose-water ointment (eminently satisfactory) is substituted, to be replaced by the shake mixture.

In the deeply indurated forms, where the face is often studded with small abscesses, the treatment must be more energetic. The pus sacs are opened with a narrow-pointed bistoury, the contents squeezed out, and the cavity mopped with a tiny cotton swab dipped in pure carbolic. The use of the needle-pointed Paquelin cautery, the micro-brenner of Unna, as a preliminary is, in my judgment, hardly justified by the results obtained.

The face should be thoroughly scrubbed with hot water and green soap once daily, and if many blackheads are present, hand sapolio may be used once or twice weekly. The use of a coarse flesh brush, to aid in the removal of the exfoliating epidermis, is often of material assistance. After drying, a strong solution of the zinc and sulphur lotion may be applied, or Vlemminckx's solution (a mixture of 20 parts sulphur, 10 of quicklime, and 200 of water, boiled down to 120 parts in an iron pot), diluted from one to five times with water, substituted.

The various ointments containing sulphur, resorcin, salicylic acid, ichthyol, or B-naphthol, alone or in combination, are sticky, dirty, and disagreeable to use, although efficient in many instances.

The x-ray gives brilliant results at times. I prefer a soft tube, placed 30 to 50 centimeters from the affected area, making the exposures very brief (from two to five minutes), especially at first. Treat two or three times weekly. If the case is going to be benefited a change for the better is soon apparent.

For several months I have been treating these cases by means of chromotherapy, in addition to the usual remedies. A high power incandescent lamp is employed, the light passing through a colored screen

before reaching the patient. In the sluggish types where marked stimulation is indicated, the white, red, or yellow is used. In the acute, or subacute, inflammations, or where a soothing effect is desired, the blue, violet, or green is employed. At first glance it would seem to many that the principal action would be on the imagination, but the actual results obtained speak for themselves, and that is what the patient wants. The plan is most excellent, both as regards cosmetic effects and the rapidity of cure, and is especially good in those cases in which considerable scarring has occurred. To Dr. J. Phillip Kanoky, of Kansas City, belongs the credit of first introducing this method of treatment in the West. Following along the lines originally laid down by Babbitt and Pleasanton, he has secured some almost marvelous results.

The smaller lamps now on the market, equipped with colored globes, may be used with more or less success, but I have yet to see one, with either single or multiple bulbs, which gives the therapeutic satisfaction obtainable from those of very high candle-power.

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MODERN MEANS OF DIAGNOSIS IN SURGICAL DISEASES OF THE KIDNEYS.

BY CHARLES P. NOBLE, M.D., PHILADELPHIA,

Surgeon-in-chief, Kensington Hospital for Women; Gynecologist to the Stetson Hospital.

In no department of surgery has greater progress in the accuracy of diagnosis been made than in that of renal surgery. Until comparatively recent times the diagnosis of surgical affections of the kidney was obscure, except in most obvious cases. The practitioner was restricted to the history of the case, palpation, and examination of the urine as means of diagnosis. The trained clinician will continue to use these well-tried means of diagnosis, but at the present time he has far more accurate methods not only of diagnosis of disease of the kidney, but of differential diagnosis concerning the condition of the two kidneys. In the order of their importance the more modern means of diagnosis of diseases of the kidney are:

Cystoscopy, with catheterization of the ureters.

The *x*-ray.

Microscopical study of the separate urines obtained from each kidney.

Study of the bacteria of the separate urines, including the injection of urine so obtained into guinea-pigs for the study of microorganisms by inoculation.

Cryoscopy, or the freezing-point of urine.

Bilateral exploratory incision of Edebohls.

Cystoscopy is a relatively old procedure, as it was introduced by Bozzini (1806), Ségales (1828), and Desormeaux (1852). As a means of practical diagnosis, however, it is comparatively modern, and has been developed and popularized by Casper, Nitze, Pawlik, Skene, and Kelly. By means of cystoscopy it is not only possible but relatively simple to obtain the urine separately from each kidney by means of ureteral catheters. It is also possible to inspect the ureteral orifices. The perfection of cystoscopy and the catheterization of the ureters has revolutionized the diagnosis of the surgical diseases of the kidney by

making it feasible not only to determine that diseases of the kidney exist through the microscopical study of the urine, but also to determine which of the kidneys is diseased, or when both are diseased the relative condition of each kidney. The importance of this cannot be overestimated, not only in the making of the diagnosis, but also in the determination of the propriety of operation upon the kidneys, more especially the operation of nephrectomy. Formerly, whenever a nephrectomy was done there was always the question unsolved as to the condition of the other kidney. Indeed, it has happened not a few times that the kidney removed by nephrectomy was the only one possessed by the patient.

Inspection of the ureteral orifices gives more information of a suggestive character at least than would *a priori* appear possible. Clinical and pathological studies have shown that tuberculosis of the kidney is hemic in origin, and not, as formerly was supposed to be the case, due to an ascending ureteritis; therefore, in all cases of tuberculosis of the kidney an inflamed ureteral orifice is of suggestive importance in the diagnosis.

By means of the ureteral catheter the urine can be obtained from each kidney not only for the study of its microscopical contents—blood, pus, tube casts, etc.—but also for chemical study as indicating the functional activity of each kidney, as shown by the elimination of the total amounts of liquids and solids, and more particularly the elimination of urea.

The same results can be arrived at by means of cryoscopy, as will be shown later.

It has been thought objectionable to obtain the urine from each kidney by means of ureteral catheters in the presence of bladder infection, lest an ascending ureteritis be induced. Theoretically this is possible, and

in the presence of active cystitis great care in the technique, or the postponement of catheterization until after preliminary treatment, is indicated; but practically, with the methods in use, the experience of those who have had most to do with ureteral catheterization is that this risk is a theoretical rather than a practical one, and that the advantages of ureteral catheterization so greatly outweigh its possible risks that these must be either disregarded or, better, minimized by care and judgment in the use of the method.

A consideration of the technical details of cystoscopy and catheterization would take us too far afield for the purposes of this paper. It must suffice to say that in general there are two methods in use—cystoscopy of the water-distended bladder and cystoscopy of the air-distended bladder. Each method has its advocates, and each its advantages for particular purposes. The method with the water-distended bladder is simpler and less annoying to the patient, and is certainly as simple and accurate for purposes of diagnosis and catheterization, if not more so, than the method with the air-distended bladder. On the other hand, the latter method is far better for purposes of treatment.

The bacteriological study of the mixed and of the separate urines has greatly refined the methods of diagnosis in the study of inflammatory conditions of the bladder, ureters, and kidneys. The ordinary bacteriological and cultural methods give satisfactory results for most of the urinary infections. For tuberculosis of the urinary tract, however, there is no method which gives such satisfactory results as that of inoculation in guinea-pigs. Bacterioscopical methods are open to two sources of error: one, that the tubercle bacilli might be present in small quantities and be overlooked, and the other that when positive results are obtained the organism may be the smegma instead of the tuberculosis bacillus. Therefore, in all doubtful cases the method by inoculation should be employed, and the method is essential for an accurate diag-

nosis in early cases of tuberculosis of the kidney. The objection to the method is the number of weeks required for the development of tubercular lesions in the guinea-pig; but in these early cases, as a rule, this is not of great importance.

Cryoscopy, or the determination of the freezing-point of the urine, as compared with that of the blood, is a relatively new method of studying the functional activity of each kidney, and is employed in conjunction with the ordinary methods of determining the same question by means of chemical examination. The method is still in the experimental stage, different observers making different reports concerning its value. Kümmell is one of its most enthusiastic advocates after having given it an extensive trial. Albarran, on the other hand, after a considerable trial, advocates its further study, but reports many sources of error. It is my own judgment that the method must be studied further before it can be relied upon to the exclusion of better tried even if more complicated methods.

The use of the x -ray is among the most important of the newer methods of diagnosis. As is usually the case with new methods, at first its value was incorrectly estimated, and its limitations, both positive and negative, are still not fully developed. The x -ray is most useful in the diagnosis of renal and ureteral calculi. Its most enthusiastic advocates claim that the stones can be demonstrated in every case. This is theoretically possible, but in practice, with the limitations of those who make use of the x -ray, the variation in patients themselves as to the relative degree of fatty deposit, such unavoidable sources of error as phleboliths, and such accidental sources of error as shadow-producing bodies in the intestines, are responsible for so much uncertainty that a single x -ray examination cannot be taken as conclusive. There can be no doubt, however, that in expert hands, with repeated exposures upon different days, stones can be demonstrated in almost if not every case, and that the absence of a shadow after examinations made under the above conditions is presumptive evidence of

the absence of stone. Doubtless with the refinements in technique now in progress with the use of the x -ray this valuable means of diagnosis will be even more accurate than it is at present.

The Edebohls bilateral incision is made over each kidney when operating for the purpose of removing one, and in order to

demonstrate by inspection and palpation the condition of the other. The method is enthusiastically advocated by its inventor, but has not met with the support of the majority of surgeons, who feel that in spite of certain undoubted advantages in general it is better to rely upon the means of diagnosis already enumerated.

A PRELIMINARY REPORT/ON CALCIUM CHLORIDE IN THE TREATMENT OF HEMOGLOBINURIC FEVER.

BY WILLIAM H. DEADERICK, M.D., MARIANNA, ARKANSAS.

The mortality of hemoglobinuric fever is high and its treatment one of the most disputed points in therapeutics. It is not surprising, therefore, that the report of Vincent (*Comptes rendus Société de Biologie*, Dec. 15, 1905) on the use of calcium chloride in this condition was eagerly welcomed.

This writer used from four to six grammes daily by the mouth, or one or two grammes in normal salt solution hypodermically. In cases of susceptible persons in whom an attack of blackwater fever could be elicited at will by quinine, he was able to prevent this attack by the preliminary use of calcium chloride. In the treatment of cases of blackwater fever he found this agent to be possessed of remarkable anti-hemolytic power.

Calcium chloride has been used successfully in paroxysmal hemoglobinuria by Saundby, and in hemophilia by Wright, Carrierre, Arthus, Labbe, and others.

I have been unable to find in the literature any further reports on the treatment of this condition by calcium chloride, hence the following notes on four cases in which I have recently had the opportunity of testing this agent may be of interest:

Case 1.—J. R., white, male, aged thirty-six, occupation liveryman, had lived in a malarial locality twenty years. He had had a number of previous attacks of hemoglobinuria, and stated that his urine would get almost black nearly every time he had fever. He had had fever about a week, and took two teaspoonfuls of a patent prepara-

tion, containing cinchona derivatives in some form, every three or four hours for three days prior to onset of hemoglobinuria. At noon of September 21, 1907, without a chill immediately preceding, he noticed that his urine was very dark. I first saw him three hours later. His pulse was 100, temperature 101°; no jaundice of skin or scleræ was present. He was vomiting persistently; the bowels were constipated; there was pain in his head and lumbar region; the liver was tender; the spleen was tender and extended two inches beyond the costal border. His urine was port-wine in color; the specific gravity was 1018; albumin was abundant; hemoglobin was present, but no bile. The microscopic examination showed urates, a moderate number of round and spindle epithelia, numerous hyaline, granular, and epithelial casts, and more red blood cells than in any case I have ever seen. The blood examination failed to reveal parasites; the small mononuclears were 18 per cent, large mononuclears 42 per cent, polymorphonuclears 40 per cent.

The treatment consisted of calcium chloride, in solution, 10 grains every three hours; and morphine hypodermically for the vomiting. At 7 P.M. he had a rigor, and another at 7 A.M. the next day. His jaundice was only slight, and vomiting had ceased. The urine cleared and remained so forty hours after onset; the temperature remained normal from forty-four hours after onset.

Case 2.—L. W., white, female, aged

twelve, born in Lee county, Arkansas. Her father had hemoglobinuric fever twenty years ago. She had frequent attacks of malaria, but none of blackwater fever, and had been having chills and fever irregularly since the middle of June, and chills six, four, and two days before I saw her. She had taken 12 grains of quinine, 3 grains every three hours until 6 A.M. The onset occurred at 7 A.M., October 2, 1907, with a rigor, followed by black water at 9 A.M. I saw her for the first time at 5 P.M. Her temperature was $104\frac{1}{2}^{\circ}$, the pulse was 145; there was jaundice of skin and scleræ, and a systolic cardiac murmur which was not transmitted. Her liver was tender, and her spleen tender and palpable $1\frac{1}{2}$ inches beyond the edge of the ribs. The bowels were regular. She had vomited only once. She had pain in the head and epigastrium. The blood examination did not show parasites. The hemoglobin was 55 per cent, small mononuclear cells 19 per cent, large 32 per cent, polymorphonuclear cells 49 per cent. Her urine was almost black by reflected light, neutral, 1012; albumin 7 grammes to the liter; no sugar, bile, or quinine. Hemoglobin was present. The microscope showed amorphous detritus, few spindle and round epithelia, no casts or red cells. The treatment consisted of calcium chloride, 8 grains every two hours.

On October 3, 1907, at 9 A.M., the record showed that the patient had not slept during the night. Her pulse was 140; temperature 100.6° . Her urine was free, no clearer; icterus was much deeper; spleen no larger; small mononuclear cells were 5 per cent, large 56 per cent, polymorphonuclear cells 39 per cent. Strychnine and saline enemas were added to the treatment. At 4 P.M. her brother reported that she was resting much better; had vomited once; had passed only about 4 ounces of urine since 9 A.M. Two enemas had been given and retained. She had not so much fever as the day before; the bowels had not moved. Her urine was red, slightly acid, 1014, albumin 2.5 grammes to the liter; hemoglobin was present; no quinine. The

microscope showed urates and amorphous detritus, few squamous and numerous round epithelia, few granular casts, no red cells. For treatment, calomel 4 grains, in two doses, an hour apart, was given.

On October 4, 1907, at 10 A.M., the temperature was 100.8° ; the pulse was 165. The patient was semicomatose, talking at random, but could be roused and made to talk sensibly. Her urine was free and clear since the night before at 7, since when she had urinated four times. She was nauseated, vomited several times, once vomiting a greenish material; the bowels acted three times freely; the tongue was coated brownish-black and the skin was very pale, but not so yellow. Her urine was red, 1010, albumin 1.75 grammes to the liter. Hemoglobin was present, but no sugar, bile or quinine. The microscope showed urates and amorphous deposit; few spindle and numerous round epithelia, very few granular casts, and no red cells. The treatment consisted in strychnine $1/90$ grain, tincture of digitalis gtt. ij, every three hours, saline enemas every three hours, calcium chloride continued as at first. At 4 P.M. her father reported her resting better, drowsy, but not talking at random. The bowels acted twice. The patient had urinated three times since 10 A.M.

On October 5, 1907, at 11 A.M., the axillary temperature was 102.8° ; her pulse was 150. She was comatose, and when disturbed answered with a groan. Her urine passed free and clear and the bowels acted twice. The patient died in a comatose state about noon.

Case 3.—W. W., white, female, aged twenty, teacher, had lived here eighteen years. Every member of her family has had blackwater fever, some of them several times, a brother having died with it. She had typhoid fever in 1893 and has had frequent attacks of malaria, but none of hemoglobinuria. Three weeks ago she had a chill, and has had fever every other day for a week. She was given 15 grains of quinine three weeks ago; no more until the twenty-first day, when, beginning at

6.30, she took 3 grains every two hours for six doses. At 4.30 P.M., October 14, 1907, after having fever for several hours, her water became dark, although no rigor or chill occurred, and when I saw her at 5 P.M. her pulse was 100, temperature 101.6°. There was no jaundice, nausea, or vomiting; her bowels were loose, and she had pain in the head. An examination of the heart and spleen was negative. Her urine was port-wine in color, alkaline, 1016, albumin 4 grammes to the liter; there was no sugar or bile. Hemoglobin and quinine were present. Microscopic examination showed amorphous detritus, numerous epithelia, very numerous hyaline and granular casts. There were no blood cells. The blood examination, after a thirty-minute search, disclosed one small unpigmented ring, and one or two small pigmented bodies; small mononuclear cells were 7 per cent, large 25 per cent; polymorphonuclear cells were 68 per cent. The treatment consisted of calcium chloride 10 grains every three hours.

On October 15, 1907, at 9 A.M., the temperature was 98.6°; the pulse was 96. The patient slept well, and vomited only once; urinated twice during the night. The urine began to clear in the morning. At 1.30 A.M. the temperature was 99½°; at 7.30, normal. There was slight jaundice of skin and scleræ. The spleen was slightly enlarged but not palpable. No parasites were found in the blood. The urine was yellow, slightly acid, 1016, albumin ¼ gramme to the liter. There was no bile or hemoglobin present, but a trace of quinine. The microscopic examination showed urates, a few squamous, round, and spindle epithelia; there were no casts or blood cells.

The urine remained free and clear and the temperature normal until October 17, when she was discharged.

Case 4.—B. C., white, male, aged 8. The patient had three uncles who had died with hemoglobinuria, and a sister had it a year ago. He had malaria every summer, but never had blackwater fever. Had several chills six weeks ago; one November 12, at 7 A.M.; and another November 13, 1907,

at 1 P.M., followed soon by passage of black water. He was given a large dose of quinine the night before, one on the day following at 12, and another at 3. When first seen by me at 7 P.M. the temperature was 104½°, the pulse was 150, and respiration 40. He had been vomiting since 5 P.M. The bowels moved twice on the same day. There was pain in the head and stomach. The examination of the liver was negative. The spleen extended 2½ inches beyond the costal margin. A cardiac systolic murmur was not transmitted. The urine was port-wine in color; the foam was red; neutral; the albumin was 14 grammes to the liter. Hemoglobin present, but no bile or quinine. Microscopic examination showed amorphous detritus, very few spindle and squamous epithelia, a moderate number of granular casts, and a few red blood-corpuscles. The blood examination showed no parasites; small mononuclear cells were 3 per cent, large 51 per cent; the polymorphonuclear cells were 56 per cent. The treatment consisted in calcium chloride grs. v and tincture of digitalis gtt. j, every three hours.

On November 14, 1907, at 3.30 P.M., the temperature was 104°; the pulse was 158 and respiration 35. The spleen reached to umbilicus. There was decided jaundice of the skin and scleræ. The bowels moved twice during the day, and the patient urinated often during the night, and four times after 6 A.M., the urine in each instance being black. The last discharge was scanty. There was carphologia with mild delirium. He vomited only twice in the day. The hemoglobin was 40 per cent. The urine was port-wine in color, the foam was red; the urine was slightly acid, 1016; albumin 6 grammes to the liter. Hemoglobin was present, but no bile or quinine. The microscopic examination showed amorphous detritus, few spindle epithelia, moderate number of casts. Strychnine and saline enmata were added to the treatment.

The child died at 1 A.M., November 15, 1907, the kidneys acting until death. There were no convulsions.

A series of four cases is too small to per-

mit of any very exact conclusions as to results of treatment, but it would appear that I failed to derive the benefits claimed by Vincent for this method. The two fatal cases were in persons whose health was probably not more undermined from previous malaria or other causes than the average patient who is attacked with blackwater fever. It is worthy of note that the cause of death in both cases was not syncope nor suppression, but exhaustion due directly to hemolysis, the very process which calcium

chloride is used to combat. In fact, in Case 2 there was unusually little damage to the kidneys if the urinalyses may be admitted as evidence. No treatment other than supportive was used which might modify the antihemolytic effects of the calcium chloride, hence any of the results obtained may be attributed to the latter.

It is hoped these incomplete observations will not prevent a more extended use of this drug in the treatment of hemoglobinuric fever, as it is worthy of further trial.

THE ANESTHESIA PERIL IN AMERICAN HOSPITALS.¹

BY JOHN B. ROBERTS, M.D.

During a recent visit in a metropolitan medical center I was shocked at the reckless manner in which general anesthetics were given. Observation during my surgical life in some ten or more hospitals in which I have operated has convinced me that a protest against the methods often pursued in American hospitals is urgently needed.

In a paper read before this society some years ago² I related four deaths from general anesthesia which I had witnessed. In none had I been the anesthetist or the operator. Since then I have had two deaths occur while operating, which appeared to be due to the ether inhaled. These six deaths are all that I can now recall; but I have many times seen dangerous symptoms arise, which would probably have ended in death had not I, or some one else, promptly taken command of the situation, and by active efforts rescued the patient from his perilous situation. Once I had to perform a hurried laryngotracheotomy to save the life of a man whom an assistant was anesthetizing injudiciously. It is probable that all surgeons of experience can recall similar cases.

It is rather suggestive that these six

deaths and nearly all the terrifying cases, which were finally rescued from impending anesthesia death, occurred in hospital practice. I have had but little anxiety of this kind among operative cases in private houses or in my office. This may be due to the fact that the usual practice in many American hospitals is to delegate the duties of anesthetist to a junior resident physician, while in my private work, for nearly all my professional life, I have had a personal assistant to give, or at least to supervise the giving of, the anesthetic.

A resident physician in a hospital is often handicapped by inexperience and by ignorance of the special views of the various operators, for whom he has to give ether or chloroform. He frequently has had no real instruction in administering anesthetics, and is as ignorant of it as he is apt to be of ophthalmology. Sometimes he is so sure of his own ability, in what he erroneously considers a minor procedure of practical surgery, that he resents any suggestions from even the operator himself.

In the communication mentioned above I stated that it was my conviction that no powerful drugs were given so carelessly, so recklessly, and by such incompetent hands as were anesthetics. I expressed wonder that deaths from ether were not more frequent, and suggested that the man who held

¹Read before the Philadelphia County Medical Society, October 23, 1907.

²Ether Death: A personal experience in four cases of death from anesthetics. *Philadelphia Medical Times*, June 4, 1881.

the ether towel should be the most skilful of the staff of assistants. More than twenty years have elapsed since those convictions were voiced. I am still unchanged in my opinion as to the verity of the conclusions.

While it is true that some American hospitals have an officer or assistant whose special duty it is to give the anesthetic or to instruct the resident physicians, this is not the common practice. General hospitals are not usually, in my experience, so equipped; although a considerable number of special and semiprivate institutions are. This may be accounted for by the fact that small hospitals have fewer operators on the staff requiring the services of an anesthetist at the same time, and that a more direct responsibility for anesthesia tragedies is felt by the proprietor of a private sanitarium or hospital than by a board of trustees of an incorporated charity. The well-known disregard of ethical considerations of various kinds by men, whose responsibility is a joint one, probably holds good here, as it does in politics and religion. An anesthesia death and a verdict for several thousand dollars damages would probably effectually close a private institution and financially cripple, as well as disgrace, its owner. The same sequence of events would affect very little a large hospital doing charitable work; and the individual members of its executive board would probably suffer no greater qualms of conscience than do the directors of a railroad company which bribes a legislature or maims its employees.

It is rather difficult for me to comprehend the attitude of many operators toward general anesthesia. They seem willing to entrust the life of the patient to any assistant, who is willing to assume the responsibility of giving the ether. They then proceed to the operative work with apparently no further thought of the danger of asphyxia, cardiac arrest, respiratory failure, or subsequent lung or liver symptoms from ether poisoning than if they were working in a surgical laboratory on a cadaver. I cannot avoid the conclusion that no inconsiderable number of deaths attributed to postoperative shock

are instances of anesthetic death, due to a preoccupied operator and an ignorant or careless anesthetist. I have sat on clinic benches and stood near operating tables more than once with thankfulness in my heart that the safety of no friend of mine was then in the hands of operators and anesthetists so indifferent, or so oblivious, to the risk of ether and chloroform.

General anesthesia is employed too often when local anesthesia, or no anesthesia at all, would be sufficient. A great deal more ether or chloroform than needed is frequently inhaled. To prevent pain and to relax muscles are the essentials of anesthesia; but these results may be obtained without constant copious additions to the anesthetic agent already in the circulation. It often happens that the patient does not recover consciousness until a long time after the operation has been completed. He should usually show evidences of recovery from the anesthetic at about the time the dressing of the wound is completed.

I have mentioned specifically in this discussion only ether and chloroform, but other drugs used by inhalation for general anesthesia are included in the same category.

It seems unnecessary to detail here the symptoms and risks of the use of the powerful agents used to put in abeyance consciousness, pain and motion. They are well known to the medical profession. My object is to direct attention to what, I believe, has grown to be a grave menace to the safety of patients, especially in the hospitals of this country. My observation necessarily has been restricted to the institutions of America. Septic infections were formerly the peril of operative treatment in hospitals. Wakley believed a half-century or more ago that incompetent surgery was then the peril in English hospitals. I have gradually been forced to think that now death from anesthesia is a not uncommon peril for those who enter our American hospitals for operative treatment. Our surgical technique has greatly improved in recent years, our knowledge of aseptic methods and of surgical pathology has vastly increased

operative possibilities; but care and discrimination in the use of anesthetic agents have not kept pace with these factors.

The recent sudden death of a colleague, immediately after an operation, has been attributed by rumor to the anesthetic. While I have no verification of the rumor at hand, I see no reason to doubt its possibility. Observation in many places has taught me that reckless disregard of the risks of anesthetic inhalation must be a common fault of medical staffs and lay managers.

The peril arises, as I see it, from inexperienced administrators, from deficient teaching, from unnecessary general anesthesia, from too great dosage, from insufficient care in watching symptoms of danger during the operation, and from neglect in keeping close watch on the patient after the operation has been completed.

Some operators have, I fear, little interest in the patient's welfare except during the actual performance of the operation, the mechanical steps of which are attractive to them. The preparation for anesthesia, the selection of the anesthetic agent, its administration, and the after-care of the patient seemingly are regarded as matters of little consequence and are left largely to unskilled and inexperienced assistants and nurses.

The practice of covering a patient's face with a towel after operation, while he, still unconscious, is being taken on a stretcher to his room is to be condemned. So is anesthetizing a man in a poorly illuminated room. It is risky to send the etherizer away from an unconscious patient to begin anesthetizing another case, unless some attentive and experienced assistant is specifically notified to watch the patient's gradual recovery from anesthesia. I have seen a patient vomit under such circumstances, when no attendant was close at hand to see that asphyxia did not occur. A patient of mine once nearly died while being carried on a stretcher by ignorant helpers through a dark corridor and up a couple of flights of stairs. I do not now recollect whether she was taken upstairs head first or feet first;

but I remember my horror at catching a glimpse of her ashen face, which had not attracted her untrained carriers' attention.

The surgeon who accepts the responsibility of operative treatment must feel the weight vastly increased, when he does not have a trained and reliable anesthetist. To keep an eye on the etherizer and to watch the condition of the patient while one is deeply concerned in the problems at the operative field is a nerve-racking duty; but it cannot be avoided unless we secure in our hospitals and in our private work better provision for anesthesia than is usually obtained.

The solution of the difficulty is to advocate more thorough training in the use of anesthetics, to encourage men to become anesthesia specialists, and to urge, even insist, that hospital authorities provide efficient assistants, whose particular duty shall be to have charge of anesthesia. There should be connected with every good hospital an anesthetist of experience, to give anesthetics and teach the subject, just as there must be a good cook and experienced operators. A hospital would soon lose its good repute if it continuously fed its inmates on sour bread. It would be gravely criticized if its operators were proved to be inexperienced and dangerous to the lives of its patients. Hence its authorities endeavor with considerable success to prevent these contingencies. Yet a patient, who at present enters many hospitals, is in more danger of illness from ether than from sour bread, and often runs more risk of death at the hands of the anesthetist than at those of the man who subjects him to the knife's edge. Why then do not the staffs or directorates of these institutions provide for security in the inhalation of ether, chloroform, and under anesthetic drugs?

The usual reply is that men will not devote themselves to anesthetic duties unless they are paid a salary. The retort to this is: "True; therefore pay them." Most things obtained for nothing are inferior to those paid for. The members of this society know right well how much better service would

often be given by the attending physicians and surgeons of hospitals, if they were paid even a small salary or honorarium. The prevalent theory is that medical men learn so much from their clinical work in hospitals that they should have no pecuniary reward for such service. The higher character of the clinical work done in the few hospitals in which the members of the staff are paid has shown the fallacy of the theory which expects good work from a busy man for nothing. This question, however, does not concern us now.

It has been found necessary in medical schools to pay larger salaries to the professors of anatomy, physiology, chemistry, and pathology than to the incumbents of the clinical chairs, because the latter gain additional revenue from private consultations. Similar action is necessary to obtain properly qualified administrators of anesthetics in hospitals. The anesthetist must give time to study and to the special duty he assumes. He therefore must be compensated for this great inroad upon the hours of the day and night.

No one can read the many-page volumes of F. W. Hewitt, D. W. Buxton, and others on "Anesthetics" and hear of the Society of Anesthetists of London without realizing how far behind Great Britain the United States is in guarding the lives of surgical patients. Hospitals have long recognized the necessity of having skilled and salaried pharmacists, and are beginning to recognize the urgent need of skilled paid radiographers, photographers, and pathologists. Their executive officers should also appreciate the urgency of the demand for the services of better persons than the average young graduates of medicine, to give the anesthetic in operative cases. To supply the sick man with a pathologist, a radiographer, and a photographer to diagnose his disease, a pharmacist to prepare his needed medicines, a cook to nourish his body, and a surgeon to cut his tissues is praiseworthy; but it all avails little, if the outcome of his sojourn in the hospital is a preventable death from anesthesia.

It is folly to expect a graduate of a medical school to know how to use anesthetic agents, when he has had little instruction and no personal experience. How can he succeed in warding off cardiac arrest and respiratory failure, subsequent urinary insufficiency, and postoperative pulmonary lesions? What does he know about Bevan's¹ investigations of the effects of anesthetics on the liver—effects which may cause death several days after the time of anesthesia? What opinion can such an inexperienced physician have of the investigations of Crile and Dolley² on resuscitation after anesthesia death by means of arterial infusion with Ringer's solution, containing a therapeutic dose of adrenalin, supplemented by artificial respiration? How can he be expected to be familiar with the advances in the use of anesthetics reported in the literature of the world, such as are contained in the recent article by Romme?³

More than this, it must be remembered that some physicians have not the mental qualities to ever become good anesthetists, even if opportunity for experience be given them. One man has the inherent characteristics of mind which enable him to become a skilled investigator, another's mental make-up fits him to be an excellent sanitarian, while a third has in him great possibilities as a surgeon or obstetrician. So it is that some physicians rapidly develop into perfect administrators of anesthetics, while in other instances neither teaching nor experience can lead to such a favorable result.

It is perhaps unfair to expect institutions alone to be responsible for the development of anesthetic specialists. Members of the profession should also feel it a duty to encourage men to enter that branch of medical endeavor. Our private patients pay us operating fees and pay for the service of trained nurses. Why should we not insist that they also give a distinct fee to the anesthetist, as they sometimes are required

¹*Journal of the American Medical Association.*

²*Journal of Experimental Medicine*, Dec. 21, 1906.

³*La Presse médicale*, June 1, 1907 (see *THERAPEUTIC GAZETTE*, October, 1907, p. 696).

to do for the services of a pathologist or chemist, who investigates the character of a morbid growth or makes an analysis of the urine? It is certain that many patients would be willing to settle a bill presented by the administrator of the anesthetic, in addition to that sent by the operating surgeon, if they realized how close many of their fellow citizens have been to death, because of injudicious handling of the powerful drug which has induced anesthetic sleep.

Many young physicians would study this branch of surgery, if they were fairly sure that an income could be derived from so restricting their practice. The question of fees naturally arises here. My suggestion is that it be understood that a skilled anesthesiologist receive a fee equal to one-tenth that charged by the operator for the operation itself. This would give the etherizer \$5 for an operation which paid the surgeon \$50; \$30 for an operation of such importance and length that the operator was justified in sending a bill of \$300. The fees for

after-treatment would, under such an arrangement, have no bearing upon the sum to be collected by the anesthesiologist. I have no doubt that the administrator of anesthetics under this custom would be willing to give his services free to poor patients to whom the operator charged no fee. In the same way it probably would be possible for institutions to have the use of a skilled man to instruct its resident physicians and take personal charge of difficult cases of anesthesia.

This suggestion is made because the one objection I have heard in a considerable number of conversations, during recent years, has been that the man who gives the anesthetic is usually expected to work for nothing or for a very meager fee. We who do operative work are ourselves partly to blame for the insufficient supply of skilful handlers of anesthetic agents. It is time that this defect in American surgery should be remedied, because the number of unnecessary deaths is undoubtedly larger than is realized by the public.

SOME RESEARCHES THAT AID AND SUPPORT CLINICAL EXPERIENCE.¹

BY H. A. HARE, M.D.,

Professor of Therapeutics in the Jefferson Medical College of Philadelphia.

My object in presenting this paper is to call attention to several interesting studies which have done much toward affording a scientific explanation of several empirical facts generally recognized by the profession.

The first of these deals with the very prevalent belief on the part of the profession that quinine, in moderate doses, is a remedy capable of aiding the body in combating infection, particularly that state generally called sepsis, in which quinine, iron, and whisky have been for years the standard medicines.

Very recently Mainwaring and Ruh, working in the Laboratory of the University of Indiana, have shown that doses of

about 3 grains of quinine very markedly increase the phagocytic power of the polymorphonuclear cells in the blood, or, in other words, the ability of these white cells to destroy invading germs. The results of their research have been confirmed by Wilson, working in the University of Chicago. These researches may therefore indicate how quinine does good in bacteremias. All of these authors assert that overdoses decrease the phagocytic activity, a fact to be carefully remembered.

In a research carried out by myself some time ago I showed, I think, pretty clearly that alcohol in moderate amount distinctly increases the bactericidal properties of the blood serum. It is not necessary to give the details and technique employed, as they are reported elsewhere. (See THERAPEU-

¹Read before the Philadelphia County Medical Society, November, 1907.

TIC GAZETTE, May 15, 1903.) As illustrative of this fact let me cite the case of an old man of eighty-four suffering from chronic renal disease with uremia of a subacute type, in whom the administration of alcohol seemed to produce a distinct increase in bacteriolytic power. His blood was tested on the 29th of October, having been taken on the 28th, before whisky was used. He was given eight ounces of whisky on each of the next succeeding five days, the blood being tested at the end of that period while the alcohol was still being taken.

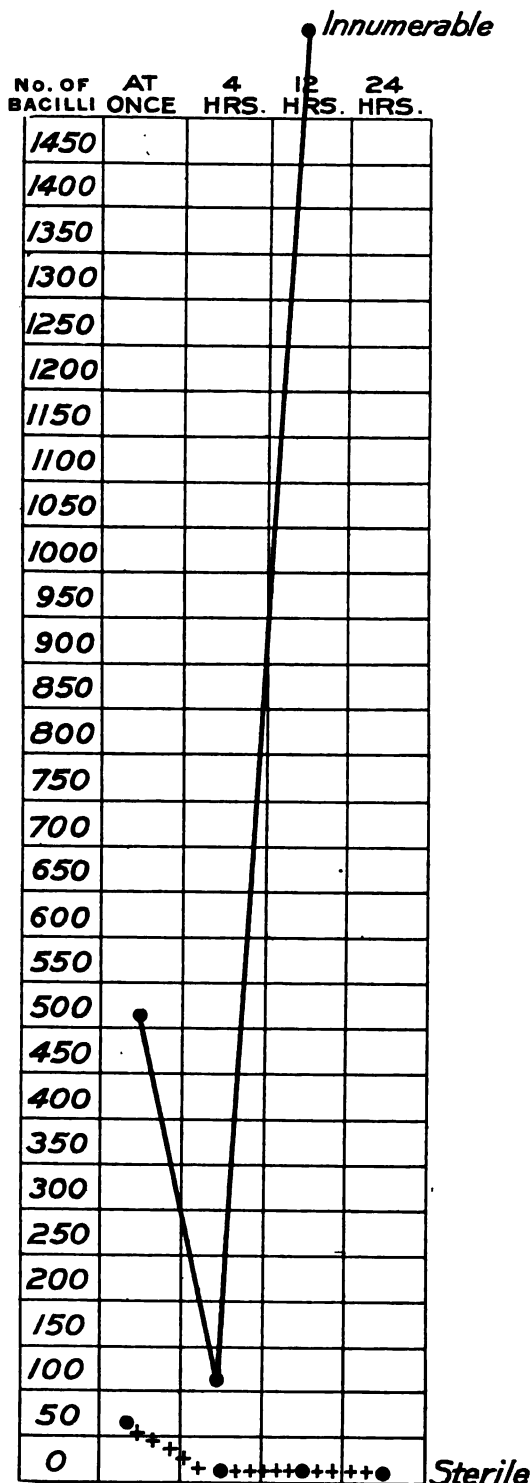
The results obtained when 0.9 cubic centimeter of his blood serum was used before alcohol showed immediately 516 colon bacilli, at the end of four hours 111, and in twelve hours they were innumerable; whereas after the alcohol had been taken examination showed immediately 76 bacilli, and after that the plate was sterile (see Chart 1).

The second patient was one suffering from chronic tubercular infection of the lungs, bowels, and peritoneum, of that slow, chronic type which gets worse so gradually that the difference can scarcely be noted from week to week, although the malady was so severe that the patient was emaciated to the last degree and had lost all control of the anal sphincter. When the alcohol was first begun and given in very small doses, the bacteriolytic power was very poor. When the dose was gradually increased the bacteriolytic power also increased, and when the alcohol was stopped it fell again. When the alcohol was renewed it rose again (see Chart 2). It would seem, therefore, that the use of quinine and alcohol in infections probably rests upon a scientific basis.

Recent work on the influence of alcohol on metabolism illustrates the fact that it is futile to attempt to determine its effect in disease from its effects in infectious fevers. The processes of oxidation in health and these processes in fever vary widely, and whereas in health alcohol forces the body to perform its normal functions plus the oxidation of alcohol, in disease it is probable that it substitutes itself for tissues which

CHART 1.

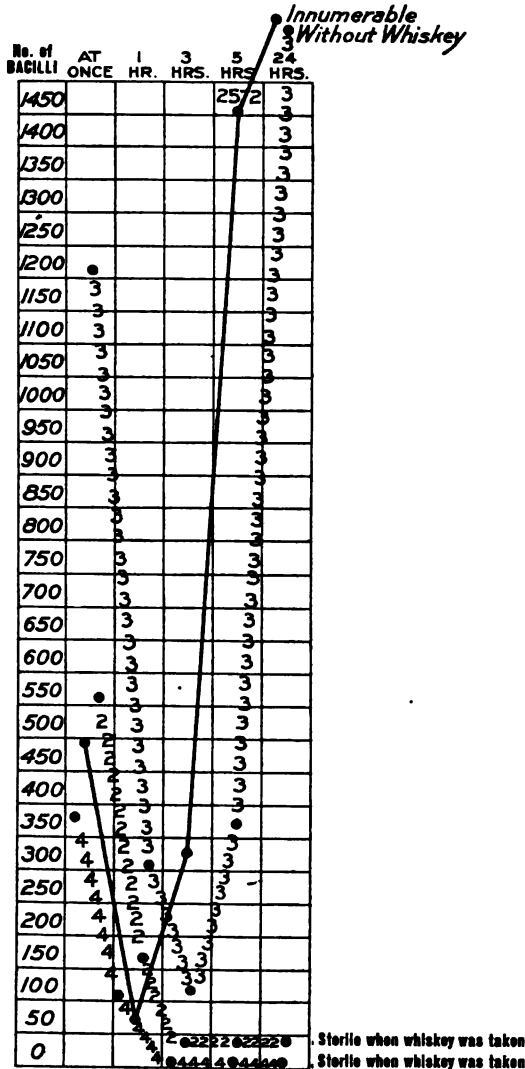
Effect of 8 ounces of whisky a day for five days. Solid line, before whisky; broken line, after whisky for five days. Bacilli destroyed under whisky.



Solid line shows the number of bacilli at first decreased, then increasing in number when no alcohol was used. The broken line shows that under alcohol the bacilli were utterly destroyed by bacteriolysis.

CHART 2.

Chart showing effect of 0.3 Cc. of blood serum on the colon bacillus under varying doses of whisky. The solid line shows the effect on a known number of bacilli at different intervals when 12 drachms of whisky were given daily. The line marked 2 shows the effect of 5 to 6 ounces daily for fourteen days; the line marked 3 shows the effect after whisky had been stopped ten days; the line marked 4 shows the effect of resuming whisky for six days, 6 ounces a day. Small doses resulted in inhibiting growth for a time; large doses caused the destruction of all bacilli by increased bacteriolysis.



would otherwise be destroyed and adds energy to the organism. In other words, to use a simile, ordinary fire may be "baffled" by an excess of fuel, but when baffled as the result of disorder (or disease) an easily consumed fuel may greatly aid the combustion processes. The truth is that alcohol is bad for some people and good for others.

To paraphrase a remark of Lincoln's, "It's good for people some of the time, but it's bad for people all the time."

Attention should likewise be called to the investigations which have been made concerning the influence of certain substances upon the coagulability of the blood. These seems to be no doubt that Wright is quite correct in his assertion that calcium chloride increases the speed with which blood coagulates, at least in a certain number of cases. It cannot be expected, of course, that in hemorrhages from large vessels the administration of calcium chloride can be of much value, first, because it will not be absorbed quickly enough to produce its effects in time to do good, and secondly, because the opening in the vessel may be too large to be closed by an ordinary clot. Another important fact pointed out by Wright in connection with the use of the calcium salts for this purpose is that the alimentary canal of certain individuals seems to be deficient in the ability to absorb calcium salts, and therefore that calcium lactate should be given hypodermically in urgent cases. The same thing, of course, holds true in regard to certain cases of rickets which suffer from a lack of bone salts, not because the food is lacking in these constituents, but because there is deficient absorption of the substitutes which go to develop bone.

Closely connected with these observations of Wright are the additional ones which he has made indicating that the large calcium content of cow's milk, when this food is administered for a long period of time, may produce an abnormal tendency to coagulation, and so in typhoid fever predisposes to phlegmasia alba dolens, should any lesion of the endothelial lining of the vessel occur, and further that any such tendency can be diminished by administering moderate doses of citric acid.

Still another matter of great interest in this connection is the fact that the employment of the calcium salts may be very useful in certain cases of urticaria, particularly in those patients who suffer from this condition after the ingestion of acid fruits, such, for

example, as rhubarb, which contains oxalic acid, and other fruits which contain citric, tartaric, and malic acid. In those persons who already have a deficiency of calcium salts, these acids dissolve and so remove from the body so much of them that urticaria and decreased coagulability of the blood result. Here, too, we find an interesting scientific confirmation of a clinical fact long recognized by the profession, namely, that the administration of a saline purge in the shape of one of the magnesium salts is useful in cases of urticaria. The explanation heretofore given has been that the purge sweeps out of the alimentary canal some poison which is responsible for the symptoms, but the correct explanation would seem to be that magnesium increases the coagulability of the blood. Its use not only cleanses the alimentary canal, but, some of the magnesium being absorbed, it increases the coagulability of the blood by replenishing it with those salts which are needful to restore it to the normal condition.

Wright and Paramore, it will be remembered, consider that the use of one and one-half pints of cow's milk per day provides the normal quantity of calcium salts under these conditions, or they recommend the use of 60 grains of calcium lactate divided into three doses of 20 grains each at eight-hour intervals, following these doses with much smaller ones in order to avoid the secondary effect of diminished coagulability if these salts are too freely given. Finally, in connection with this subject we must not forget the interesting work of Wright and Ross in which they point out that many cases of so-called albuminuria are apparently due to a lack of calcium salts in the blood, and suggest not only that these salts be given to cure albuminuria but that by their use we may make a differential diagnosis of physiological albuminuria, so-called, which depends upon certain conditions of the blood, and the albuminuria of renal disease, since in the latter condition the calcium salts do not cause any decrease in the quantity of albumin which is present in the urine.

Another point, to which I may refer as being a therapeutic application of physiological investigation, is the use of a salt-free diet in cases of dropsy, on the principle that by this means the tonicity of the body fluids is lowered, and therefore there is not such a tendency to the accumulation of fluid in the tissues. Given a case of renal disease in which the excretion of the saline material of the urine is deficient, it follows that there must be an accumulation of salts in the tissues. These require large quantities of water to make them possess the tonicity of normal body juices, varying from 0.7 to 0.9. This plan of treatment, which in theory is most excellent, does not always work out in practice, but general anasarca is a condition in which we are often forced to go from one measure to another in the hope of getting relief, and the so-called dechlorination treatment by withholding salt from the diet is a thing which may be tried with some hope of success. The diet ordered by Widal under these circumstances consists of $\frac{1}{2}$ pound of meat, 1 pound of potato, 3 ounces of sugar, 3 ounces of unsalted butter, and $2\frac{1}{2}$ quarts of liquid per day.

Somewhat allied to the use of citric acid, already mentioned for the purpose of diminishing abnormal coagulability of the blood, is the employment of citrate of sodium for the purpose of influencing the coagulation of milk after it is taken into the stomach. This therapeutic advance has now been tried by so many clinicians with excellent results that it is a method which has undoubtedly come to stay. It enables the physician to give milk freely in cases which otherwise cannot digest it, and it saves him from forcing a child to ingest a large quantity of liquid, which cannot be avoided where cow's milk has been diluted to bring the casein percentage to a degree which will permit of normal digestion. Usually one grain of citrate of sodium to the ounce of milk is quite sufficient for this purpose.

It may not be out of place for me to quote a paragraph of an article which I wrote some time since for the editorial pages of the THERAPEUTIC GAZETTE. A

correspondent of the *Boston Medical and Surgical Journal* of June 13, 1907, evidently a physician, exclaims against the common habit of practitioners of administering various extraordinary drugs to meet conditions which are popularly believed to be the cause of certain disagreeable symptoms. He points out that the idea that uric acid is responsible for a host of morbid states was promulgated some twenty years ago, and having been accepted by physicians with an enthusiasm entirely unjustifiable, has reached the laity, which are now prone to regard every ailment as being due to this cause, when, as is well known, uric acid itself is a normal product in the body, and even when injected into the blood in considerable quantities is incapable of producing any deleterious effects or grave symptoms. Finding that lithia, when mixed with uric acid, formed a soluble urate of lithia, the conclusion was at once jumped at that lithia would be a useful thing in the so-called "uric acid diathesis" to aid in the elimination of this substance, when, as a matter of fact, the action of lithia in the body is quite different from that of its effects in the test-tube, since it has a greater predilection for the acid sodium phosphate of the blood, which fluid it may damage by taking out this important ingredient. Again, it has been freely administered whenever the physician found an excess of uric acid and urates in the urine, when, as a matter of fact, this excess in the urine showed that the patient was getting rid of an excess of uric acid. As has been pointed out repeatedly, if lithia is ever needed for uric acid, it should be given to those patients who are passing too little and not too much of this substance.

After lithia had had its vogue a rival was introduced in the shape of the more expensive product known as piperazine, which was stated to be twelve times as powerful as lithia in dissolving uric acid. Later still, lycetol appeared as a rival of piperazine, and both of these substances were for a time popular until they had been weighed in the balance. Since then a series of other uric acid solvents have been introduced.

It would seem that the time has come when the uric acid idea should receive its quietus, but as is well said by the writer that I have quoted, "if it were possible to kill the uric acid idea, nail it up in a coffin and bury it under six feet of earth, it would still find means to ooze out through the pores of the wood so that the earthworms could bring it again to the surface as they do the anthrax bacilli." Once more we quote from this clever contributor when he says that "the uric acid theory seems so plausible to many persons that their mind takes the same trend as that of the woman with mammary carcinoma, who never rests until somewhere in the remote past she can remember having fallen against the corner of a piece of furniture and damaged her breast."

Lastly, attention should be called to the effect exercised upon the movements of the food in the stomach under the influence of acid. For years physicians have used hydrochloric acid to "aid digestion" with the idea that it aided in digesting proteids alone. The researches of Cannon and others have proved that the acid governs the movement of food from the stomach into the bowel. When there is a state of marked acidity at the pylorus this part of the stomach relaxes and permits the stomach contents to pass into the duodenum, but no sooner is an acid reaction present in the bowel than this causes a closing of the pylorus. The result is that if proteid foods are ingested these take up so much acid that they are detained in the stomach until their digestion is completed, when with the accumulation of acid the pylorus opens, whereas when carbohydrates are taken, which are chiefly digested in the duodenum, and which do not take up much acid, they speedily pass into the bowel because the state of acidity at the pylorus is soon developed. The use of hydrochloric acid, therefore, influences gastric motility as well as aids in the conversion of proteids into peptones, and indirectly it may hurry the digestion of starches and prevent their fermentation in those cases in which they are unduly detained in the stomach. Further than this

Bayliss and Starling have shown that the presence of acid in the duodenum results in the secretion into the blood-stream of a substance called secretin, which in turn causes a secretion of pancreatic juice, the trypsinogen of which is converted into an active proteid-digesting ferment (trypsin) as soon as it comes in contact with a ferment in the succus entericus called "enterokinase." The use of hydrochloric acid, therefore, indirectly aids gastric motility and intestinal digestion.

SCOPOLAMINE-MORPHINE ANESTHESIA.

The *Journal of the American Medical Association* of October 12, 1907, reminds us that Gauss has very carefully elaborated the technique of scopolamine-morphine anesthesia in labor (*Centralbl. f. Gynäk.*, Jan. 12, 1907). This article was abstracted in the *Journal of the American Medical Association* of March 9, 1907, page 912; another article by the same author was abstracted in the *Journal* of March 16, 1907, page 983. His ideal is to produce a state in which the patient perceives but does not remember what is going on around her. She is carefully guarded from rising into full consciousness or lapsing into narcosis by repeated tests of her memory. Some object is shown her, and at the end of twenty to thirty minutes it is recalled to her attention. If she remembers seeing it before, the slumber is not deep enough and a new dose is given. As the labor goes on the objects used to test the memory are varied, and a record is kept of the responses of the patient to these repeated tests. The first dose consists of 0.01 gramme (1/6 grain) of morphine and 0.0003 gramme (1/230 grain) or sometimes 0.00045 gramme (1/150 grain) of scopolamine. The doses are measured from separate solutions of the alkaloids and given hypodermically. By using separate solutions the dose of each may be graduated to suit the exigencies of the particular case. If the first test of the attention made three-fourths to

one hour after the first injection shows memory of sensation a second dose of 0.0003 or 0.00015 gramme (1/230 or 1/460 grain) of scopolamine is given, but no morphine, and from this time on the scopolamine is given almost always without morphine. If the slumber is deep enough the dose is postponed until the tests show returning memory. The amount needed varies from 0.00075 to 0.0009 gramme of scopolamine (1/90 to 1/75 grain). Seldom is 0.0003 gramme (1/230 grain) sufficient, and occasionally 0.0012 gramme (1/55 grain) is necessary. Gauss stated that a continuous absence of memory has been attained by this method in 72 per cent of 1000 births. He warns against beginning with too large a dose or too early, or adopting the method when there is uterine inertia, as shown by weakness of the pains.

These details show the great care with which this method has been worked out, the inherent dangers having been carefully kept in view. The careful graduation of doses and the omission of morphine in the later stages make it impracticable to carry out the method with mixtures of the two alkaloids in solution or with compound tablets; furthermore, the careful watching of the patient necessary for record of her memory precludes the physician from leaving her except in the charge of an intelligent trained nurse.

In the *Archiv f. Gynäkologie* (lxxx, No. 2) W. Steffen gives a review of the history of the use of scopolamine-morphine in obstetrics, which is abstracted in the *Journal* of May 25, 1907, page 1821. In this he includes the reports of Gauss, Leopold, and others, and his conclusions are: "(1) The method does not accomplish the desired results; (2) it cannot be regarded as harmless for mother and child; (3) it is not to be recommended for use in private practice, as the by-effects which are liable to develop make it necessary that medical aid can be summoned at any moment."

It is important to take note of these cautions, lest careless use of the method result in unnecessary sacrifice of infant life.

EDITORIAL.

SURGICAL ANESTHESIA AND INTRASPINAL INJECTION.

On a number of occasions facts in regard to the production of surgical anesthesia by the intraspinal injection of local anesthetics has been discussed in the Original, Editorial, and Progress columns of the *THERAPEUTIC GAZETTE*. Several years ago in the editorial columns we expressed the belief that this method had a very limited range of usefulness, and that it was not destined to become exceedingly popular. Within the last year, largely through the introduction of several newer local anesthetics, the subject of intraspinal injection has once more come to the front, and a very large number of patients have been operated upon when under the influence of these various drugs applied in the manner described. It is a noteworthy fact that some operators have used this method in such a large number of instances as to justify them in considering that they have given it a thorough test, and it is also a noteworthy fact that most* of those who have persistently used it, until they have accumulated large statistics, are still favorable to its employment. A point of equal importance, however, is the fact that, compared to the total number of cases operated upon under ordinary anesthetic measures, the number which are operated on to-day under intraspinal injection is exceedingly small; and, again, those surgeons who employ skilful anesthetists for the administration of ether and chloroform almost invariably adhere to these older drugs and greatly prefer them to the injection methods.

One of the important factors in all operations is the avoidance of mental and nervous shock to the patient, and this avoidance is obtained only when a drug is employed which destroys consciousness as well as prevents pain. In other words, modern surgical anesthesia is not only a blessing in that

it prevents suffering of the body, but also because suffering of the mind is entirely abrogated. We have repeatedly seen cases in which the patients assert that they suffered no pain at the site of the operation, but who were, nevertheless, so mentally perturbed and suffered such agony of mind that their circulatory system was grievously disturbed, so that before the operation was completed it was necessary to establish mental quiet by the use of ether or chloroform. That this mental side of the picture has been recognized by many who employ intraspinal injection is shown by the fact that a number of those who are most enthusiastic in its employment see to it that their patients receive, an hour or more before intraspinal injection is resorted to, a hypodermic dose of scopolamine alone, or in association with morphine, with the object of benumbing mental processes; but, for that matter, many surgeons at the present time use one or both of these drugs hypodermically prior to the use of chloroform and ether in order that the patient's mind may be quieted before the general anesthetic is taken by inhalation.

In this connection we may call attention to several items which have been very recently published in our Progress columns, in which the use of stovaine has been employed by intraspinal injection with asserted good results. We may also call attention to an article contributed by Torrance to *Surgery, Gynecology and Obstetrics* for December, 1907, in which he details the results which he has obtained not only from his own comparatively limited employment of intraspinal injection, but from a collective investigation embodying over 5500 cases communicated to him either personally or obtained by him from medical literature. His series deals entirely with the synthetic substance known as stovaine. Many of the authors whom he quotes have had as high as three or four hundred cases, and one of

them, Adam, is credited with 1700. Torrance evidently believes that this method of establishing anesthesia is quite satisfactory in a large proportion of cases, and he quotes the opinion of well-known surgeons along these lines. Thus, he states that Moynihan uses stovaine for spinal anesthesia in old people to whom he fears to give ether. Becker thinks that spinal anesthesia will reduce very materially the use of general anesthetics. Jordan suggests that it be employed in the toxemia of pregnancy when anesthesia is needed, and Dean asserts that spinal anesthesia is an ideal method in acute abdominal cases. It would seem that the majority of surgeons who have used spinal anesthesia believe that tropacocaine is the drug of choice.

On the other hand, it is undoubtedly a fact that most of the large general hospitals throughout the world, and particularly in this country, have failed to take up spinal anesthesia, and they use it, if at all, for extraordinarily rare cases.

We think that the conclusions arrived at by Bloodgood and expressed in *Progressive Medicine* for December, 1907, are practically those of most American surgeons of large experience. He quotes Kurzwelly, of Stuttgart, who states that after long experience with all the different drugs they have given up the method in that hospital, and that when comparing 300 cases of spinal anesthesia with 600 of general anesthesia they have found that the dangers and discomforts of the latter are distinctly less, and also that the danger of pneumonia has not been set aside by this method. Bloodgood's own opinion is as follows, namely, that with the great improvement in general anesthesia, spinal anesthesia is not a competitor. Personally he has never employed it.

With the introduction of the drop method of administering ether, in a manner which is practically identical with the drop method of administering chloroform, and with the general recognition of the fact that patients must never be saturated with ether, the number of postanesthetic accidents has become very small.

TREATMENT AND DIAGNOSIS.

It is unfortunate that too often men who are busily engaged in the practice of their profession are inclined to base their diagnosis, and therefore their treatment, upon the description of the subjective symptoms which is given them by the patient without controlling their diagnosis and treatment by a careful investigation of objective symptoms which can only be obtained through careful physical examination or the analyses of the various secretions. The result is that not infrequently cases which would ordinarily be treated with the greatest celerity are unnecessarily prolonged, and occasionally the carelessly made diagnosis subjects its maker to a considerable degree of humiliation and mental distress. There can be no doubt that brilliant conclusions, drawn from a patient's description of his symptoms, is an attractive method of diagnosis, but there can also be no doubt that in a given number of so-called "snap diagnoses" a very large percentage will be found to be entirely, or at least in part, erroneous. As illustrative of the evil of basing a diagnosis on one finding we may cite an instance in which the parents of a child were caused untold mental suffering by reason of the fact that during an attack of subacute gastrointestinal catarrh, of rather obscure origin, the urine was submitted for microscopical and bacteriological examination, and the report made that it contained tubercle bacilli. Ultimately, the child entirely recovered, and it was found that the so-called tubercle bacilli were smegma bacilli.

In an interesting address delivered by Mr. Howard Marsh before the Reading, England, Pathological Society and published in the *British Medical Journal* of December 7, 1907, entitled "The Scientific Use of Evidence in Surgical Practice," he quotes a number of instances of the character just spoken of, and seizes the opportunity to protest against the reaching of conclusions without careful study of the case, even in instances in which the diagnosis seems to be evident at first sight. Thus, he states that he has repeatedly seen cases of syno-

vitis of several months' duration in which a gonorrheal infection was flatly denied, in which micturition was reported to be natural, and in which no appreciable gleet was present, but in which, when a laboratory examination was made, gonococci were found, - and when a catheter was passed stricture was detected. Again, he cites instances of a septic throat or a carious tooth, an old sinus or a cutaneous boil having been the source of an infectious synovitis for which no cause was evident to a careless examiner. He also quotes the case of a great consultant, universally revered, who diagnosed a case as one of "intercostal rheumatism," and prescribed for it as such, only to be cast into the pool of humiliation by the patient saying, "By-the-bye, sir, they tell me I have got an aneurism of my abdominal aorta," a condition which was most manifest as soon as a physical examination was made. The late Dr. James Hutchinson, of Philadelphia, was wont to say that most of our difficulties in diagnosis depended upon a lack of careful investigation of the patient, and John Hunter remarked, "Don't think—go and see," while Mr. Haldane has recently said in an address that we do not think enough. As a matter of fact, John Hunter's advice can be improved upon, changing the words so as to read "Do think, and go and see."

In this connection we may remark that too often physicians in examining a case ignore the negative signs and pin their faith only upon positive ones. Thus, for example, failing to find bronchial breathing or subcrepitant râles in a given area of a lung they conclude that no lesion is present, when the very absence of breath sounds in that part, or a great diminution in their intensity, may be quite as valuable in aiding in determining the presence of pneumonia as the more positive ones that are commonly sought and generally found.

The absence of fluctuation in a case in which pus is suspected of being present is no proof that it is not present, although the presence of fluctuation possesses a positive value far in excess of negative signs.

ON CERTAIN VITAL PROPERTIES OF MILK.

For centuries it has been the common belief of many of the profession and most of the laity that milk is capable of transmitting from a mother to her offspring certain properties, or effects, over and above those commonly included under the head of nutritious principles, and more recent scientific investigation has proved that this belief is based upon actual fact, it having been found that young animals which receive milk from mothers which have been immunized against certain infections possess an immunity which other young animals do not have. Very recently another investigation along somewhat similar lines has been carried out by Coplans in the University of Leeds, who reports his results in the *Lancet* of October 19, 1907. The object of his investigation was to determine the comparative reactions of new milk, stale milk, frozen milk, and boiled milk toward organisms which occur normally in the alimentary canal. Every precaution was used to see that the milk was obtained from a source which was beyond contamination. The test organism used was the bacillus coli. In the first place he found that new milk when mixed with a definite number of a culture of this organism caused within the first six hours a decrease of one-half of their number. At the end of twenty-four hours 230 organisms were present. From twenty-four to forty-eight hours 563 organisms were present, and at the end of forty-eight hours 129,490 existed. Boiled milk, on the other hand, caused no change during the first six hours. During the first twenty-four hours there were 4550 organisms, and at the end of forty-eight hours there were 182,000 microorganisms. In other words, the new milk possessed a primary bactericidal influence and inhibited the growth of germs in a manner which boiled milk did not exercise.

The great advantage of breast milk is therefore that the inhibitory phenomena which it exercises are absolute for more than an hour after its ingestion, and almost

absolute for the second hour, and during this time the process of digestion has taken place. There is therefore little opportunity for the growth of microorganisms. Milk which is taken twelve hours after it is obtained possesses less power. Boiled milk exercises no restraint of growth, and any arrest in the growth of microorganisms is produced solely by the digestive juices. Preserved milk—that is, milk preserved with any of the ordinary preservatives—arrests the bactericidal properties of the milk. In other words, a milk which has its inhibitory power damaged is reduced to the level of boiled milk and acts as a medium for the unrestrained growth of organisms save for the check of the digestive juices. As Coplans well says, every feeding of milk from the breast tends to diminish the growth of microorganisms in the alimentary canal. Therefore, breast feeding, aside from any advantage it may have from other points of view, aids in diminishing bacterial growth and in keeping the child's digestive system in a state of health.

In the *Journal of Infectious Diseases* of November 15, 1907, St. John and Pennington report their results obtained from a study of the influence of pasteurized milk upon the growth of bacteria. It is not necessary to give details of their experiments, but they conclude that ordinary milk possesses a distinct restraining power upon the microorganisms ordinarily found in this fluid, and that heating this milk to 79° centigrade materially impairs or destroys this influence. The practical conclusion for the practitioner to arrive at from these researches would seem to be that given fairly pure milk it had better not be pasteurized, but if it is pasteurized, it should be done just before the child uses it; since if it is pasteurized some hours before and is exposed to infection, it is so favorable a field for the growth of microorganisms, in view of its impaired bacteriolytic power, that it is qualified to produce grave illness. In other words, commercial pasteurized milk, while theoretically advantageous, is practically capable of producing deleterious effects.

THE RELATION BETWEEN SHOCK AND DEPRESSION OF THE VASOMOTOR CENTER.

Many years before the experiments of Crile and others, which of late have served to impress the surgical part of the profession with the necessity of a thorough knowledge of physiology, it was taught by more than one well-known teacher that one of the dominant factors in cases of shock was vasomotor depression, with the result that the patient was bled to death into his own blood-vessels. The work of Crile and his collaborators has not only served to emphasize this well-known fact, but also led him to the conclusion that strychnine, which had for many years been employed by surgeons to combat shock, was useless because the vasomotor center being paralyzed and its function destroyed, strychnine could not produce an effect. As a result of this teaching a number of surgeons who had hitherto used strychnine in large doses gave it up entirely, and from relying upon it as a valuable drug immediately came to that state of mind in which they regarded it with fear. In an editorial which we wrote many months ago for the *GAZETTE* we advanced the opinion that this change of heart, like many other sudden changes, was excessive in its nature, and while on the one hand strychnine doubtless is not as valuable in shock as some have supposed, on the other hand it is a great mistake to cast it aside as useless, even if it be true that in severe shock strychnine cannot raise the blood-pressure because the vasomotor center is paralyzed. There must be a considerable number of cases in which the vasomotor center is only depressed, and therefore its functional activity can be increased by any drug, like strychnine or caffeine, which tends to stimulate nervous protoplasm.

It is a mistake, too, to believe that all the changes which take place in blood-pressure under severe operations depend upon changes in the functional activity of the vasomotor center. In abdominal and thoracic operations a large amount of the change, if not all of it in many cases, depends upon hydrostatic conditions, and

local nervous disorders are produced by the handling and exposure of the parts involved; any fall in pressure which takes place being due not to inactivity of the vasomotor center, but to damage to the subsidiary centers or local nervous supply of the vascular apparatus. In other words, the blood-vessels of the abdomen being capable of holding all the blood in the body, any interference or disturbance of these vessels and their nerve supply may cause a tremendous fall in blood-pressure without the vasomotor center in the medulla being concerned in any way whatever, save that, secondarily, anemia of the medulla impairs the activity of this center.

Some recent experiments which are recorded in the *American Journal of Physiology* of December 2, 1907, by Dr. W. T. Porter, Professor of Physiology in Harvard, assisted by H. K. Marks and J. B. Swift, seem to indicate that the vasomotor center is far less susceptible to impulses received from the periphery than is commonly supposed, and these skilled investigators do not hesitate to point out that some of the conclusions reached by surgeons as a result of their observations upon human beings are hardly justified by the conditions which are said to exist. Thus, in one of Cushing's cases which he cites as indicative of paralysis of the vasomotor center produced by peripheral irritation, Porter and his collaborators point out that it is much more probable that the great fall in blood-pressure which took place, so that the pulse disappeared at the wrist, was due to cardiac inhibition rather than vasomotor palsy. They assert that it is quite possible that in a number of Crile's experiments, which were supposed to prove this same point, the condition was really dependent upon other causes than centric vasomotor paralysis. Finally, they assert that in a considerable number of experiments which they carried out they uniformly failed to produce a significant fall in blood-pressure by prolonged and severe irritation of a nerve, with the object of determining whether it was possible to exhaust the vasomotor center, and they state that they have seen no instance

in their own experiments, or in literature, in which the blood-pressure suffered more than a usual temporary fall in cases uncomplicated by inhibition of the heart, hydrostatic reduction, or anemia of the bulb.

We think that these observations of Porter and his fellows have much practical bearing, and while strychnine may or may not be needed for the purpose of stimulating the vasomotor center, we believe that it is of value in many cases for the purpose of overcoming the nervous depression produced by the shock of the operation or the anesthetic. It may be true that the administration of strychnine before an operation with the object of preventing shock is unwise on the ground that it increases the susceptibility of the nervous system to shock, but after the damage has been done it may well be used to overcome the depression which has been produced.

THE SERUM DIAGNOSIS OF SYPHILIS.

Since the efficient treatment of syphilis, from the appearance of the first lesion through the entire secondary and tertiary periods, has for its basis the use of mercury, and as many of the lesions of the disease, particularly those of the tertiary period, are in no way characteristic, simulating so closely other forms of infection that the diagnosis is too often not even suspected, or at times has to be made by what is called the therapeutic test, applied as a rule inefficiently, it is evident that a means of establishing beyond peradventure the presence or absence of active syphilis would be from the standpoint of the therapist of priceless value. That such a diagnostic means has been found is the firm conviction of Butler (*New York Medical Journal*, Nov. 30, 1907), who announces himself as a convert to the conclusions deduced from the studies of Wasserman and Bruck. These students base their investigations upon the announcement of Bordet and Gengou to the effect that when antigen is brought in contact with its specific antibody a combination occurs, in which a third substance known as complement, if present, is

anchored. They applied this principle to syphilis, a disease of unknown etiology. The antigen used by them was extracted from primary syphilitic lesions or syphilitic organs. Monkeys were treated with such extracts. From these, immune serum was taken and mixed with luetic liver extract in definite proportions in a reagent glass. In many instances a fixing of complement took place. This reaction they believed would enable one to demonstrate the presence of antibodies in the body fluids of syphilitics, or to determine whether a given organ contained syphilitic substance.

Bordet and Gengou determined the nature of the infection by mixing the inactivated serum of the infected animal with the supposed bacteria, and adding complement. If the serum in question contained immune bodies (amboceptor) against the bacteria, a union between bacteria, amboceptor, and complement took place. If to such a mixture after some time blood-corpuscles and inactivated specific hemolytic serum are added, solution of the blood-corpuscles cannot take place because the complement necessary for the hemolysis has already been absorbed by the combination of bacteria and bacterial amboceptor. A solution would, however, occur in case the serum did not contain immune bodies against the bacteria, as in this case free complement would persist and be ready for union with the hemolytic amboceptor and blood-corpuscles.

This singularly lucid description of the subject, somewhat obscured by the coinage of words new to the profession at large, is supplemented by the description of a technique, which, though not given in complete detail, strikes the mind of the average practitioner as so greatly complicated as to rob it of most of its practical value. This technique is described by Butler as follows: In view of the unknown etiology of lues, extracts of syphilitic organs are used as antigen. (1) Antigen: extract of liver or spleen of a syphilitic new-born, and similar extracts of normal organs for control. (2) Antibodies: the serum or spinal fluid of the suspected syphilitic person, and serum of a non-syphilitic as control. (3) Complement:

guinea-pig serum. (4) Hemolytic serum: rabbit's blood. (5) Five-per-cent suspension of blood-corpuscles.

The preparation of the substances used is as follows:

1. Antigen. The syphilitic and normal liver are cut up and placed in separate normal sodium chloride solutions in the proportion of one gramme of liver to five cubic centimeters of salt solution. The containers are placed in a shaking apparatus and shaken for twenty-four hours, when the overlying liquid is removed and centrifuged to clearness. This is pipetted off and kept on ice for use.

2. Antibodies. Five to ten cubic centimeters of blood is withdrawn from a vein of the suspected syphilitic person. The serum is collected therefrom, either after coagulation or by defibrinating and centrifuging. As control, normal serum is similarly obtained.

3. Complement. Guinea-pig's blood is usually employed, and obtained in same manner as just described.

4. Hemolytic serum. Blood serum of a rabbit that has been injected with suspension of lamb's blood-corpuscles is preferably used.

5. Blood-corpuscles. Lamb's blood is defibrinated and five cubic centimeters of same is washed with salt solution. After washing, 100 cubic centimeters of salt solution is added, making a five-per-cent suspension.

All organ extracts and blood sera except the serum used for complement are inactivated. The substances employed are so diluted that each cubic centimeter represents the amount of the material necessary in the reaction.

In performing the reaction place one cubic centimeter of a 20-per-cent solution of the luetic liver extract in a test-tube with one cubic centimeter of a 20-per-cent solution of the suspected serum and one cubic centimeter of a 10-per-cent solution of guinea-pig serum; incubate for three-quarters of an hour, and then add one cubic centimeter of the solution of hemolytic serum and one cubic centimeter of the

5-per-cent suspension of lamb's blood-corpuscles, and incubate for two hours. If the suspected serum contains luetic antibodies hemolysis will not occur.

It is pointed out that it is important to demonstrate that none of the substances employed in the reaction alone or mixed, except in the case of luetic extract and luetic serum, bind complement, and thus hinder hemolysis.

It is also noted that it is sometimes necessary to vary the quantities of luetic extract and luetic serum, as the luetic liver may of itself bind complement in the proportions used. Dilution of the extract will be necessary to prevent this action.

It is further noted that the luetic organ extract is a most troublesome substance to deal with, as it may undergo at any time during its keeping such changes as to render it unfit for use, either in fixing too much complement or in losing its antigen.

As a control for the luetic liver extract, a known syphilitic serum, with which one has already had a plus reaction, should be used.

Butler quotes a number of authorities in support of this method of diagnosis, with results, as they appear summarized, which the average reader can hardly consider as proving the case. Until the profession is convinced of the accuracy of the test it is not at all probable that the ordinary active practitioner will, when he is in doubt as to the diagnosis of a case of syphilis, devote himself to securing first a dead syphilitic new-born child from whom the liver and spleen can be removed; next a healthy person willing to be bled as a control; next a guinea-pig; next a rabbit; and finally, a lamb. Nor is he likely to devote the time needful for the obtaining and preparation of the material from these various sources, their proper admixture, and testing.

Though it cannot be doubted that if this method is entitled to the high opinion in which it is held by Butler, the larger clinical laboratories of the country will be prepared not only to carry it out, but to so simplify it that its application may be more feasible.

THE OPEN TREATMENT OF RECENT FRACTURE.

Although it is well recognized that the vast majority of fractures can be treated by position splints, bandages, and extension, the latter usually in the long axis of the limb, at times—and this is especially true of fracture of the lower extremity, supplemented by lateral extension—it none the less remains true that there are certain simple fractures in which the ends of the bone cannot be brought into proper apposition, or if this be accomplished, in which retention is impossible unless the seat of injury be exposed by an incision, the broken ends of the bone properly apposed and held in place by wires, screws, sutures, ferrules, pegs, or one or other of the various devices which most simply fulfil the mechanical requirements of the case. With the general adoption of cleanly methods, an important part of which is the use of thick rubber gloves, and the use of instruments adapted for the purpose, the proper apposition of fractures through an incision and the retention of the bones in place is neither difficult nor tedious, nor does it imply extensive traumatism. There are some fractures which are now universally regarded as amenable only to open treatment. The best instance of this class is probably complete transverse fracture of the patella, with separation of the fragments. There are few surgeons who at the present day seriously consider any other method than that by suture. The need of suturing the broken olecranon is equally great, though perhaps not so generally recognized, and the same may be said of fracture of a portion or all of the femoral trochanter or the tuberosity of the os calcis.

In regard to fracture about the elbow-joint opinions differ widely. Most of these breaks heal promptly and with little deformity or disability when treated in the flexed position.

Carless (*Practitioner*, May, 1907), in discussing fractures of the elbow-joint, believes that operation is required when the fracture is complicated by vertical cleft or split in the nature of a T or Y, though dis-

placement does not necessarily ensue if the periosteal flap be not torn. Where there is marked displacement and deformity above the elbow operation is always indicated in order to fix the fragments one to the other, even if it be unnecessary to secure the united fragments to the shaft.

Carless considers the introduction of a screw through the fragments sufficient. Where comminution of the lower end of the humerus is extensive, since the ultimate healing of such fractures results in the production of much callus with the obliteration of the olecranon and coronoid fossæ, besides being accompanied with intra-articular adhesions of such a character as to interfere permanently with the movements of the joint, subperiosteal resection of the lower end of the humerus is advocated, if it be found on exploration that the fragments cannot be satisfactorily fixed to one another by screws, nails, or pegs.

In the epiphyseal separation of children, not infants, in which the line of cleavage extends into the diaphysis from one side to the other so that the lesion is partly a separated epiphysis and partly a fracture, the general features of epiphyseal separation are largely maintained in that the periosteum remains firmly attached to the epiphyseal cartilage, is stripped off for a considerable distance upward, and in the cavity thus formed blood collects. Where it is impossible to effect reduction, and the adoption of the acutely flexed position is impracticable, operative treatment is desirable. A cut is made down to the site of the fracture on either side, dividing the periosteum, so as to allow the blood collected beneath it to escape. The fragments are then manipulated into position, and the limb put up in acute flexion, which in itself usually suffices to maintain apposition, the introduction of wires or nails or screws being generally superfluous.

Fracture of the external condyle Carless believes should be subjected to early operation. The line of fracture reaches the joint between the trochlear surface and the capitellum. The detached fragment is drawn slightly downward and rotated forward by

the muscles attached thereto. Reposition without operation is almost impossible, though acute flexion is the position which most encourages this. A screw is the means of securing apposition.

Fractures of the internal condyle and trochlear surface are much less common and should also be treated by open operation. Separation of the internal epicondyle should be subjected to operation, the fragment being fixed by a nail or a screw. Only one way of dealing with fractures of the olecranon is recognized when complete separation is present. Silver wire is the method of choice. Fractures of the head of the radius also call for operation if there is separation of the fragments.

Huchet after reviewing the postural treatment of fractures about the lower end of the humerus and quoting Tuffier's conclusion to the effect that the elbow should be immobilized at an acute angle when the external condyle is involved, at an extremely acute angle if the internal condyle is involved, and should be treated first by flexion and then by extension to 130 degrees if the fracture is supracondyloid, and if this means fails to secure proper apposition open operation is indicated, states that the simplest method of surgical intervention lies in osseous suture. To Lambotte he gives the credit of having formulated the lines of incision and the new technique of osteosynthesis in cases of fracture of the lower extremity of the humerus. In supracondyloid fractures the method of choice is the securing of an aluminum plate to the external surface of the humerus by means of four screws. In fractures lower down, quite near the articular surface, one screw is placed below the external epicondyle, the other below the internal condyle, each being driven upward and toward the long axis of the bone. The screws employed vary in length from three to four centimeters. The seat of operation should be fully exposed to view. The fibrous bands should be removed, often the periosteum stripped up and away. In fractures of the internal condyle the screw is driven upward and inward from just below the condylar projection

parallel to the surface of the humerus in this region.

In fractures of the external condyle reduction is often difficult: The screw is driven in four or five millimeters in front of the point of the epicondyle, and carried directly across in the direction of the internal epicondyle, so that were it sufficiently long it would come out about 5 millimeters in front of this last point. In complicated fractures the lesion is reached by the posterior route. Several screws are placed, one horizontally to bring the internal and external condyles together, two obliquely upward and toward the axis of the humerus to obviate displacement.

König (*Archiv für Klin. Chir.*, Bd. lxxxiii, 4 H.) after noting from x-ray pictures and post-mortem examinations that fractures of the neck of the femur, even though they be partly extra-capsular or completely impacted, often unite by fibrous union, and that this method of union is habitual with intracapsular, non-impacted fractures, observes that such fibrous union does not always cause great disability. Moreover, he notes that the intracapsular fractures are by no means confined to the aged. They are seen at times before the twentieth year, and in the incomplete form are fairly common during early manhood. The ultimate result is extreme crippling. The best treatment of these fractures, especially in the young or middle-aged, is by close and accurate suture.

König exhibited a specimen illustrating the result which he had obtained in the case of a patient sixty-nine years old, who was subjected to operation eight days after the accident. The head and neck of the femur were fixed to each other by two sutures of wire. Functional recovery was complete. Death followed some months later by consumption. Bony union was entirely satisfactory where the sutures gripped, but in the posterior part of the break, where the apposition was not so complete, there was simply fibrous union. The incision advised in applying these sutures is the anterior one placed between the rectus and the extensor

vaginæ femoris, and reaching the capsule of the joint without dividing any important structures. Sawing through and turning up the trochanter has been practiced by a number of surgeons, but is unnecessarily severe.

König advises suture in practically all intracapsular fractures in which the diagnosis is complete. He strongly commends suturing or pegging for isolated fracture of the trochanter, moreover performing the operation as soon as the diagnosis is made. The subtrochanteric fracture, if transverse, can usually be treated by the ordinary methods, though Schlange (*Archiv f. Chirurgie*, Bd. lxxxi, H. 2) has reported 47 cases with excellent results following surgical intervention. The oblique subtrochanteric fractures are sometimes extremely difficult to reduce or retain.

Bardenheuer claims excellent results from extension. It is to be noted, however, that he uses as much as 112 pounds, a treatment which it can be imagined would be difficult to maintain. For those oblique fractures which cannot be reduced or retained König advises early operation. Often both an anterior and posterior incision is needful, and even though reduction be accomplished may require the ferrule, central ivory peg suture, metal plates, or two or more of these methods combined. Fractures of the shaft of the femur can usually be treated satisfactorily by ordinary methods. Intervention is indicated in the lower end of the femur only when the joint surfaces cannot be placed in proper apposition with each other.

König agrees with Bardenheuer to the effect that when neither nerves nor vessels are wounded nor soft parts extensively interposed, surgical intervention is not indicated in the treatment of fractures of the femoral shaft.

Lund (*Boston Medical and Surgical Journal*, 1907, vol. clvi, p. 202) reports the case of a man fifty-six years old treated in 1904 for intracapsular fracture. By an anterior incision the ends of the fragments were curetted, a short incision was made over the outer surface of the great trochanter, and a nail was driven through the head into the pelvis. The nail was taken out in 5½

months. It was found loosely embedded. The result, though not in detail, is reported as good.

Vaughan (*American Journal of the Medical Sciences*, vol. cxxxiii, pp. 373, 389) states that he has recently operated upon 4 fractures of the superior maxilla, 12 of the lower jaw, 5 of the clavicle, 9 of the humerus, 5 of the radius and ulna together, 1 of the radius alone, 10 of the ulna alone, 10 of the femur, 19 of the patella, 16 of the tibia, and 3 of the fibula. In other words, he has performed the open operation in recent fracture in 90 cases. If by the term recent he means within the last year, which is a fair presumption, he affords a good instance of the extent to which surgical enthusiasm may carry a wise man, unless perchance his clinical material is much richer than that afforded by the majority of hospitals.

The tendency of modern times in fixing fractures whether they be recent or old is toward the use of an appliance which can be buried in the tissues and which does not call for drainage. Before the advent of rubber gloves, plates, screws, and often silver wire formed the center about which infection persisted until the foreign body was removed. At the present time all these substances may be safely buried, and are likely, though not certain, to remain in the tissues indefinitely without giving trouble.

For comminuted fractures through cancellous tissues, as about the extremities of the long bone, sutures of chromicized gut are likely to prove most serviceable. For either transverse or oblique fractures of the shafts of the bones silver plates secured in place by screws, supplemented if needful by wire winding, will be found the safest and best means of securing union.

REPORTS ON THERAPEUTIC PROGRESS.

RHEUMATOID ARTHRITIS.

From a practical point of view the diagnosis and treatment of the disease are of supreme interest. Early diagnosis is of first importance, since it is evident that better results will be likely to follow if the nature of the malady is recognized and suitable treatment is employed before deformity of the joints manifests itself. The early stages of the disease are characterized by rapidity of pulse, local sweatings, and progressive involvement of joints. The tachycardia is persistent, scarcely any variation being observed by day or night. Many observers have also drawn attention to the spotty pigmentation so frequently seen in the skin of patients suffering from this disease. Cold extremities are also a characteristic feature.

Whilst these general symptoms may suggest the nature of the illness attention is naturally especially directed to the condition of the joints. In the acute form, as Dr. Luff has pointed out, the synovial mem-

branes are primarily affected, while the ligaments are softened and infiltrated, presenting the well-known spindle-shaped enlargement of the joints. The cartilages are damaged secondarily, and it is not until the disease has assumed the chronic form that the signs indicative of destruction of the cartilage become evident, accompanied with cartilaginous and osteophytic outgrowths. At this stage, too, the grating in the joints and the resulting deformities are characteristic, being evident both to the physician and to the patient. Dr. Luff has further drawn attention to the existence of Heberden's nodes, which represent the mildest degree of the disease and are found in the chronic form of rheumatoid arthritis. Some observers lay stress on the aid given to diagnosis by the use of the x -rays. The necessary apparatus, however, is not available to all practitioners, and hence a conclusion must be arrived at by a consideration of the general and local signs which have been alluded to.

The treatment of rheumatoid arthritis differs in many respects from that adopted in rheumatism or gout, hence again the importance of diagnosis presents itself. The diet must be as liberal and good as the patient can digest, and animal food may be freely partaken of. Stout or ale may also be given with advantage. The drugs recommended by Dr. Luff are guaiacol and iodide of potassium. Guaiacol is best given in cachets in the form of the carbonate. At first from five to ten grains may be given three times a day, and the dose should be increased by one or two grains each week until from 15 to 20 grains are taken in each dose. Dr. Luff insists on the importance of continuing this treatment for at least twelve months. The beneficial effects of guaiacol may be added to by administering at the same time iodide of potassium, combined with a tonic to counteract its depressing effect. Iodide of iron has also yielded good results in the hands of some observers. Douche-massage when obtainable has yielded good results, and so have peat and brine baths. Radiant heat baths have also proved of advantage. When such measures cannot be obtained, however, much relief may be derived from the use of general massage regularly given. Local massage of the joints is not so satisfactory, but physical exercises may be of advantage when properly regulated.—*Lancet*, Aug. 17, 1907.

TREATMENT OF UREMIA.

OSBORNE in the *Journal of the American Medical Association* of August 24, 1907, says that we may sum up the treatment of uremia as absolute muscle rest; the withholding of all food, not even giving milk; administering very little water by the mouth even if there is no edema, as the ability of the kidneys to excrete water, even, is often abolished; frequent colon irrigations of hot water, leaving some in the colon for absorption if the blood-pressure is low and there is no edema; the administration of thyroid; hot sponging of the skin; venesection in most cases, repeated if necessary, as it has

been shown that an ounce of blood will remove more toxins than eight or nine times that amount of fluid feces or than quarts of perspiration; and the administration of nitroglycerin if the pulse tension is high. If the uremic period is past and the kidneys again begin to secrete and excrete, the diet and life of the patient becomes of primary importance.

THE CAUSES AND TREATMENT OF STERILITY IN WOMEN.

REYNOLDS discusses this subject in the *American Journal of the Medical Sciences* for August, 1906. In speaking of the effect of vaginal discharge upon sterility he points out that even when an abnormal uterine discharge is due to lesions of the upper genitalia, the vaginal discharge is soon affected by contact with it; hence the rule that an abnormal uterine discharge of necessity implies a similar vaginal affection, which should be subjected to treatment simultaneously. The converse of this rule, however, is not always true, and those cases in which only the vaginal discharge is affected, though often obstinate, usually yield in the end a very large percentage of success. When the vaginal discharge is of the type to which the author has given the provisional name of fermentative—that is, abundant, acid, and yellowish, but not purulent, while the uterine secretion is normal—the frequency of easy relief by antifermentative treatment lends some support to the provisional hypothesis that this form of change is due to an overactivity of the normal flora.

This form of abnormality is always remediable by thorough and repeated disinfection of the vagina; but a great deal of experience in its treatment has convinced the writer that while this statement is most definitely true, a clinically adequate performance of the disinfection involves an extreme attention to detail, and is seldom accomplished satisfactorily in less than from six to twelve treatments, repeated at intervals of two to three days—it may require more. One detail, which the author believes to be especially essential to effective disinfection,

is that the vagina during treatment should be so thoroughly distended that the crevices between the rugæ are fully exposed, and the rugæ themselves as nearly as possible effaced. This involves in most cases a thorough loosening of the garments about the waist and the assumption of the knee-chest position. The disinfectant used should be one which, without excoriating the vagina, is capable of penetrating the superficial epithelium. The text-books on pathology tell us that the vagina is liable to an exfoliative vaginitis in which the superficial epithelium is cast off in a thin eschar, which may sometimes be detached in the form of a more or less complete cast of the vagina, and that this condition may be produced by the use of many antiseptic and astringent agents; they do not tell us what the venders of nostrums have long known, that the separation of these eschars of a mild exfoliative vaginitis is not necessarily attended by any excoriation of the surface, but leaves behind it when produced by most reagents a normal and clean-looking vaginal mucous membrane. A preparation which was at one time exceedingly widely sold was an example of a nostrum which, though not very valuable, achieved its popularity by the mental impression produced by the expulsion after its use of such a cast of the vagina—of course in connection with the highly colored statements as to its nature, which were published with the remedy. The word eschar, however, is overdescriptive of the exfoliation produced by the milder reagents. The author was for long uncertain whether it was anything more than a coagulation of the vaginal mucus, but he has become convinced that, whichever it is, it is harmless and an index to an efficient disinfection of the infected vagina.

The technique which, after trying many substances, the author has found most effective is that after putting the patient in the knee-chest position and exposing the vagina with a Sims speculum, its walls are thoroughly dusted with powdered protargol, through a powder-blower, in such quantity that the powder adheres to the wall of the vault over its whole surface; a pledget of dry absorbent cotton is then placed against

the powdered surface, the speculum is slightly withdrawn, and the surface which is newly exposed by its withdrawal, as well as that which has been wiped clean by the passage of the cotton, is repowdered, until by a repetition of the process the entire vaginal wall has been covered with the antiseptic. The patient is directed to return at the end of forty-eight hours. She is again placed in the knee-chest position and the cotton is removed, when if the protargol has been thoroughly used the greater part of the vagina will be covered with a thin, grayish membrane, which can usually be wiped from the surface by the gentle use of absorbent cotton. This eschar is too superficial to be harmful; it will usually be absent from some parts of the vagina, and will perhaps at others be too adherent to be easily removed. No effort is made to detach the latter, but the dressing of protargol and dry cotton is repeated precisely as before, and the process is repeated at intervals of two or three days until the discharge has become scanty and colorless. Aristol is then substituted for the protargol for one or two succeeding treatments, and after an interval of a week or less without treatment the secretion is reinspected and tested for acidity. If it is normal it is reinspected at intervals of a week or more, since the yellow color and overacidity are not infrequently reproduced after an interval without treatment, but they are then usually overcome by comparatively few applications. In the absence of an alteration of the cervical discharge—that is, in merely fermentative vaginitis, again to coin a term—this treatment rarely fails to be effective, and permanently effective.

APOMORPHINE IN ACUTE ALCOHOLISM.

In the *Medical Record* for July, 1907, ROSENWASSER states that in treating periodical dipsomaniacs, in all stages of the attack, he has found apomorphine in full dose of inestimable value, and is convinced that it has been the means of ending the attack in many instances. During the attack this class of patients, as is well known, have but one thought, one aim, one desire—liquor.

The demand for the so-called stimulant is a veritable imperative conception. Apomorphine compels sleep, and when the patient awakens his chain of thought has been broken and the attack is over in many cases.

In all acute cases he has found the action of an emetic of some value in sobering the patient and diminishing or abolishing the desire for more drink, and therefore the dose of apomorphine he usually gives is 1/10 grain by hypodermic injection, adding 1/30 grain strychnine if the heart is acting poorly. Whenever possible, when giving the injection, he has the patient lying down in bed and has basins in readiness, as the action of the drug is so rapid.

He has never failed to secure the hypnotic effect in alcoholics, and only once failed to secure the emetic effect from 1/10 grain administered hypodermically. This occurred in a young man who had studied medicine, and in whom he had used apomorphine with the desired result in a previous attack. From the action of the drug he knew that apomorphine had been given, and when the drug was injected in a subsequent attack he insisted that he would not vomit, and was successful in fighting off the desire to do so. He was unable to remain awake, however.

The author has had one case—not alcoholic—in which vomiting did not occur, though 1/5 grain was injected in two 1/10-grain doses within about twenty minutes. The patient was a strong young man, in previous good health, who suddenly became stuporous. The author was summoned and reached him within a few minutes. There being a suspicion of poisoning, he promptly injected 1/10 grain. Vomiting did not occur and the stupor deepened. After waiting about twenty minutes he again injected 1/10 grain, and obtaining no result, had the patient removed to the hospital. He awakened after several hours and went home. While no positive diagnosis was made, the author is inclined to believe that the case was one of epilepsy.

One need not give emetic doses in order to secure the hypnotic effect. In many cases 1/30 grain given hypodermically will be

found sufficient to induce sleep. If the general condition of the patient is fair the dose may safely be repeated in about three hours if necessary, as the drug is not cumulative in its action. A non-emetic dose (1/30 to 1/20 grain) may also be given a few hours after a full dose, if it be desired to prolong sleep or to keep the patient quiet. Occasionally vomiting follows the use of doses as small as 1/30 grain; more frequently slight nausea is experienced.

If it be deemed advisable to prolong the sedative effect by bromides, chloral, or similar drugs, it will be found that smaller doses will suffice than are ordinarily required. This is a point of no little importance considering that all such drugs depress the heart.

When administered by the mouth the drug cannot be relied upon. Vomiting does not follow the taking of a full dose, and sleep is but rarely secured. A sedative effect, however, is sometimes obtained.

As a hypnotic in acute alcoholism, apomorphine possesses a decided advantage over such drugs as bromides, chloral, sulphonal, trional, and paraldehyde in being available for hypodermic use and insuring prompt action. Valuable time is saved, and the wishes of the patient can be disregarded. It is especially of value in enabling one to dispense with the use of hyoscine, a drug which Rosenwasser has often been compelled to use when it became imperative to subdue a patient who would not swallow other remedies, or having swallowed them would promptly eject them. The writer thinks this point of value, because Hicks, of Newark, N. J., whose opinion he values, says "hyoscine is a dangerous drug and should never be used; the symptoms following its use are those of insanity. A patient on the border-line of insanity can be made insane by hyoscine."

We all know that many alcoholics are "border-liners," in the treatment of whom more than ordinary caution must be exercised.

Eight years have elapsed since Douglas made his announcement about apomorphine in alcoholism, and it is five years since Cole-

man and Polk published the results of their investigations. Rosenwasser believes that apomorphine has not received the recognition it deserves. On inquiry among medical friends he has been astonished to find that scarcely any one of them ever heard that apomorphine possesses hypnotic powers, and he has encountered no one who has ever used it as a hypnotic. Hence he makes a plea for its more extensive employment.

ETIOLOGY AND TREATMENT OF PRURITUS ANI.

In the *New York Medical Journal* of August 3, 1907, BRAV reminds us of the well-known fact that in the treatment of this disease the cause must be found and removed, if success in the treatment is to be obtained. If rectal constipation is present, this must first of all be overcome. An attempt should be made to secure at least one evacuation of the bowels every day. This can often be accomplished by dietetic and hygienic measures. If these measures are not effective, a dose of cascara at bedtime in addition to gentle massage of the sphincter with the finger and followed by the injection of three ounces of olive oil and its retention over night is very effective in a large majority of cases. The repeated administration of purgatives is apt to aggravate the condition, and it had better be avoided if possible. If fecal impaction be present the treatment consists of the removal of the mass. This may sometimes be accomplished by the use of enemas and assistance of the finger of the physician. In cases of long standing, however, this treatment is not effectual, and the removal of the mass must be executed under an anesthetic by first dilating the sphincter thoroughly and then breaking up the mass with the fingers, or iron spoon, when the broken up pieces are removed one after another.

When pruritus is a symptom of internal hemorrhoids, it is easily cured by their removal. When fistula is found to be the exciting cause the cure will rapidly follow the usual operation for this condition. Pruritus is often dependent upon other diseases

of the rectum or anus, such as polypus, fissure, prolapsus mucosæ recti, condylomata, acute and trophic proctitis, neoplasms, ulcers, stricture, etc.; the proper treatment for these conditions will speedily and effectually cure it.

Want of cleanliness being sometimes the cause of pruritus ani, it is well to instruct the patient to cleanse thoroughly the anal region after each act of defecation, and to keep the part dry in the intervals. Fecal soiling, excessive perspiration, or discharges should be wiped off, and the parts should be bathed with hot water, dried, and then dusted with boric acid finely powdered.

If the presence of oxyuris vermicularis in the rectum is observed to be the source of trouble, they may be eradicated by simple measures, the best known of which is an enema of quassia or salt water after each passage in conjunction with anthelmintics. Seat-worms are more readily removed in children than in adults, and in one case it took the writer almost a year to rid his patient of them, when the itching was entirely relieved. If pediculi are found to be the exciting cause of pruritus, the use of bichloride of mercury, larkspur, stavesacre, and acetic acid will destroy the parasites, and the consequence will be the cessation of the itching. If the microscopical examination of the epidermis proves the presence of a vegetable parasite (trichophyton) a wash of sulphurous acid of various strength applied frequently, or the application of iodine, will eradicate the disease.

Chronic eczema is to be treated as elsewhere in the body. If the patient manifests a rheumatic, gouty, or syphilitic diathesis, or if he is suffering from diabetes mellitus, Bright's disease, or obstructive diseases of the liver or heart, or when evidence of eczema in other parts of the body is seen, he should be treated for that particular disease. In women, uterine disorders must be cured, first, before we attempt to treat the pruritus. When the affection is due to disease of adjacent organs the adequate treatment of those affections will rapidly cure or ameliorate the pruritus.

Where no distinct cause can be found to

account for the itching, the diet should be regulated. Meat should be used sparingly and overseasoned food avoided, likewise alcoholic stimulants and tobacco, tea and coffee. A light diet and regular hours for sleep should be recommended and insisted upon.

While it is true that the removal of the cause is of prime importance in the treatment of itching, the physician will do well to make the patient as comfortable as possible in the meantime by local applications to allay the itching. It is equally true that in some cases the removal of the apparent cause fails to relieve pruritus, in which instance the condition requires special treatment. The author finds the following formula used by Goodell in pruritus of the vulva a most reliable and soothing application:

R Chloralis et camphoræ, aa ʒiv.

Rub these into an oil and then add:

Unguenti simplicis,

Pulv. acidi borici, aa ʒiv.

M. S.: Apply with a brush three times daily after cleansing the parts with hot water.

In some cases the addition of 20 grains of carbolic acid, in others again 20 grains of menthol, is extremely beneficial, and is often sufficient to secure a good night's sleep. When the skin is fissured the application of a 5-per-cent solution of silver nitrate or a 50-per-cent solution of ichthyol or balsam of Peru in full strength are useful and effectual stimulants for healing. In cases of pruritus ani due to syphilis citrine ointment or the ammoniated mercurial ointment gives good results.

Some cases will not yield to the aforesaid treatment, and more heroic measures are required to get the desired result. The author employs successfully pure carbolic acid, the saturated solution of silver nitrate, or the Paquelin cautery. These remedial agents destroy the epidermis of the affected skin, resulting in cessation of the itching. Having the same object in view, Mathews recommends as a last resource the resection of the affected skin. In order to prevent the nocturnal itching and to insure a good night's rest, Allingham advises "the intro-

duction into the bowel of a bone plug about an inch and a half long, shaped like the nipple of an infant's feeding bottle, with a circular shield to prevent its slipping into the bowel." He attributes the benefit derived from this procedure to the pressure exerted upon the venous plexuses and filaments of nerves close to the anus. Divulsion of the sphincter muscle may also be resorted to when the ordinary remedies are of no avail.

There are instances which prove most obstinate and resist all forms of treatment, and in spite of the best of care cannot be cured permanently. It is therefore advisable not to promise patients too speedy relief, so that they are not disappointed. Whenever the author undertakes to cure a case of pruritus ani he always tells the patient that a cure may be effected within a short time, say two weeks, but sometimes only after prolonged effort and many discouragements. If we then have the opportunity to watch and follow intelligently the treatment we will generally meet with success. Where the itching is so intense as to prevent sleep, it is necessary to administer a hypnotic; morphine or opium should never be employed, because they aggravate the itching on the following day. Chloral, sulphomethane, and veronal are very reliable hypnotics, but should be used cautiously in chronic cases, so as not to induce a habit.

PREVENTION OF HEART COMPLICATIONS OF SCARLET FEVER.

EDDY gives the following advice in the *American Journal of Obstetrics* for October, 1907:

First, as soon as the diagnosis is made these patients should be put to bed for at least three weeks, no matter how slight the affection may be, as we often have the most severe complications with the mildest attacks. Late nephritis is especially frequent and one of the prime etiological factors of heart lesions.

Second, the diet should be strictly liquid—milk to be preferred, although gruels and broths are quite permissible. At all events the patient should take freely of water.

Third, antipyretics should not be used for two reasons: (1) because they are not needed in the mild cases; (2) because they are too depressing to be used in the severe cases.

We should depend upon the cold sponge, the pack, or the evaporation bath, if necessary, but do not think it wise to use the tub bath, because of the fear and strain connected with its application.

Fourth, special attention should be given to oral sepsis, for not only is it a constant generator of toxins, but also the important factor in producing adenitis, cellulitis, and otitis media that we so frequently see, and which still further endanger the heart.

In addition to the gargles and sprays generally used, these cases should receive frequent nasal irrigation (best with a fountain bag) of normal salt solution, two-per-cent boric acid solution, or bichloride of mercury 1:10,000 to 1:6000—the child lying on his abdomen, the mouth being kept open to prevent swallowing.

Fifth, the skin should be kept soft and active by the frequent use of baths and the application of lard or lanolin containing from one to two per cent carbolic acid, which destroys the scales and relieves the itching so frequently present.

Sixth, the bowels should be watched closely throughout the disease, calomel being administered at the beginning and at intervals throughout the attack. Salines are of value, and one should not forget the importance of daily colonic flushings with normal salt solution.

Seventh, it is the custom of the author to use mild non-irritating diuretics throughout the disease, such as spirits of nitrous ether, or liquor ammonii acetatis, and in the ten cases he has treated during the recent epidemic he has not even found a trace of albumen, with careful watching.

Eighth, when vomiting is persistent all medication should be discontinued for a short period, excepting perhaps the addition of lime-water to the milk. If the angina is not too severe, lavage may be used if necessary.

Ninth, the treatment of the different

heart lesions varies so little that the author takes them up collectively: -

(a) Absolute rest upon the back, the pillow being removed. (b) The patient should be in a large, well-ventilated room, care being taken to avoid a draught. (c) A good nurse is indispensable, as it is impossible to care for these cases in any other way. (d) The ideal diet should be rich in albuminous foods, but here we are handicapped by the danger of acute nephritis; however, we should feed them as well as conditions will permit. (e) The eliminative treatment should be the same as given under prevention, unless the cases are very severe, when it is wise to dispense even with the bath and flushing. (f) In no case should the patient be nervous or restless; this should be controlled by the use of morphine in small doses, which is stimulating to the heart as well. Should above symptoms be extreme, large doses are indicated. (h) The proper use of stimulants requires frequent visits by the physician and the constant watching of a capable, trained nurse, as changes are sudden and many times without warning. (i) Strychnia is no doubt one of the best stimulants we have for these conditions, and should be given in every case, not only for its stimulating effect but for its generative action on the heart muscle and nerves as well. (j) Alcoholic stimulants (especially brandy) are invaluable, and should be given in from half-drachm to half-ounce doses, depending on the age as well as on the condition of the patient. (k) As conditions are so variable and changes so sudden in these cases, we must rely to some extent upon the nurse, as it is just as important not to overstimulate the heart as it is not to give enough. Camphor is one of the best stimulants we have at our command in these cases, which should be given in sterile olive oil, hypodermically, in from one-half to one-grain doses. The author has observed the heart action improve by its use when other stimulants did not seem to have any effect whatever. The important features about its being given with oil hypodermically are its slow absorption, continued action, at the same time

allaying the nervous symptoms. The nurse should always have a hypo ready for immediate use. (l) Digitalis should not be used, especially when we have marked myocarditis, as the contraction of the arterioles increases the tension and favors dilatation. However, it may be of value when we have a rapid pulse with extremely low tension; the best preparation being fat-free tincture or freshly made infusion. (m) The use of the ice-bag should not be forgotten where we have a rapid, irregular action. (n) Our guide in determining the time for the patient to get up should be the pulse and murmur (if one be present). The murmur should have disappeared and the pulse should not show more than a very slight increase from this exertion. Should the pulse show a distinct rise it is indicative that the heart is not able as yet to withstand the extra strain. (o) The anemia should receive its proper treatment with the peptonates of iron and arsenic.

THE THERAPEUTIC VALUE OF APO-MORPHINE HYDROCHLORIDE.

FISK, in the *Medical Record* of September 28, 1907, reaches these conclusions:

1. The effect of apomorphine hydrochloride, when administered by the mouth, is widely different from the hypodermic effect.

2. Hypodermically, it is a most valuable centric emetic in doses of 1/20 to 1/6 grain, acting speedily, certainly, and gently, even in cases of narcotic poisoning prior to the stage of coma. Average adult dose, 1/10 grain. Also recommended to be tried in all cases in which hypnotics or antispasmodics are indicated, in doses preferably somewhat less than the emetic dose, depending upon the tolerance of the individual—i.e., 1/40 grain or more.

3. When given hypodermically to children or debilitated subjects the possibility of its depressing effects should be borne in mind, and appropriate doses of strychnine simultaneously administered.

4. By the mouth its centric effects are so uncertain as to render it useless as an emetic and of little value as a hypnotic. The

effect is practically limited to expectorant action. Average adult dose, 1/8 grain every two or three hours, dissolved in syrup of wild cherry or syrup of lactucarium, with a few drops of dilute hydrochloric acid to insure solution.

5. It does not increase the effect of other narcotics, such as morphine, codeine, or heroin, which may be simultaneously administered when it is desired to lower the excitability of the respiratory center without checking secretion. Strychnine may also be simultaneously administered in debilitated subjects for its stimulating effect on the respiratory center and to forestall possible depression, although even in the case of delicate children there is little fear of such depression from the administration of the pure crystalline preparation by the mouth.

6. Apomorphine, like other expectorants of its class, if used at an improper stage, when there is abundant secretion, or pushed to the extreme, may flood the bronchial tubes with mucus and drown the patient in his own secretion, especially if he lacks muscular power to expectorate. Such results, however, are not to be feared from an intelligent use of the remedy.

7. Crystalline apomorphine hydrochloride should always be specified. There is a slight danger of adulteration with morphine if the drug is not thoroughly washed when manufactured. On general principles, the fresh preparation should be used if possible, but a greenish discoloration of tablets or solutions does not necessarily contraindicate their use, especially if originally prepared from the pure crystalline salt by a reliable drug firm.

CHEMISTRY OF SALIVA IN RELATION TO HAY-FEVER.

KYLE states in the *Journal of the American Medical Association* of August 3, 1907, that the treatment of hay-fever has always been subdivided into local and systemic treatment. It is a well-known fact that there are many cases of hay-fever in which any local treatment, instead of relieving the symptoms, seems to either aggravate them

or to bring on an attack. Occasionally, however, the alkaline or acid douches seem to afford some relief. This is easily explained by the fact that the alkali or acid would change the reaction of the irritating secretion; yet if either solution was used in the wrong type of case, this influence would only be aggravated. Chemical experience has proved this to be true. The author does not wish himself to be understood that this is applicable in all cases. Some cases certainly receive considerable benefit from local sedatives, and if certain sensitive areas are removed the susceptibility on the part of the individual would be lessened. At the same time the underlying cause would still remain.

The plan of treatment which the author has followed, and which has been based on the chemical analysis, necessarily varies in different individuals. The general plan, however, is attention to the secretions, that is, the elimination—active intestinal tract, stimulants to the liver, free action of the skin; in other words, increased elimination. The treatment will depend on whether the condition is alkaline, acid, or neutral, whether it is due to the presence of ammonium salts, the sodium salts, potassium salts, or whether there are present sulphocyanides, lactic acid, or oxalic acid. To meet these conditions citrate of soda, lactate of soda, benzoate of soda, which renders active compounds inert, boric acid, dilute hydrochloric acid, dilute nitric acid, various forms of salicylates, sodium chloride—all may be used to counteract a certain chemical ingredient present in the saliva, so that the drug must be selected purely on this basis.

The author has observed several cases relieved by the administration of sodium chloride, others by the administration of benzoate of soda, others by boric acid, and so on through the list, after first increasing elimination as much as possible, through the skin and intestinal tract. The patient should always be instructed to drink plenty of water. Following this basis the author has, without any application whatever to the nasal mucous membrane, succeeded in about 60 per cent of the cases. The other

40 per cent he has been unable to relieve by either local or systemic remedies, and was also unable to analyze and separate the irritant and the secretion. Whether these 40 per cent belong to some other type of case he does not mean to say, but he does wish to make it emphatic that the relieved cases passed through the attacks year by year by taking the medicine before the onset and occasionally during the period in which they have suffered from the hay-fever. Some cases extended back over a period of eight to ten years, and others varying down to the last year.

PARACENTESIS OF THE PERICARDIUM.

In the course of an article in the *Physician and Surgeon* for June, 1907, Dock tells us that the methods of operating, both diagnostic and therapeutic, vary considerably, partly on account of the exigencies of cases, partly on account of the judgment and experience of the operator. Since pericarditis may require an emergency operation, and because cases almost always come under the observation of the physician or general practitioner in the first place, it is desirable that the technical details be clearly understood. If physicians would look for pericarditis in acute diseases in which it is likely to occur as constantly as they do now for pleurisy, and if they acted upon the suspicion as is now being done for empyema, a small but important set of cases would make better recoveries than they do now, and some very difficult cases of heart disease would be prevented.

The simplest method of operating is puncture by an aspirator—the successor of the trocar recommended by Senac. Notwithstanding the imperfections and limitations of aspiration, it has been of undoubted value in pericarditis. It can often be used when a better operation would not be permitted. It suffices in many cases for diagnosis, and in some for treatment. If it were used more frequently, and its revelations made more familiar to physicians and patients, more thorough operations would

be easier to secure, as has happened in regard to peritonitis and pleurisy.

Aspiration of the pericardium can be done with any suitable instrument. The hypodermic needle is often recommended, but it is usually too short and of too fine caliber to be useful. The needle should not be less than one millimeter in outside diameter and five centimeters long, and attached to an efficient syringe, such as the glass antitoxin syringe. The flat trocar and cannula of Curschmann is doubtless useful. The operation must be done with aseptic precautions. The needle should be introduced slowly, as in all exploratory aspirations, so as to enable the operator to feel the tissues. In that way the uncomfortable (Baumler) feeling of the heart scratching against the needle can sometimes be recognized in time to prevent tearing the muscle of a coronary vein, or penetrating one of the cavities. The sites for aspiration must be selected with careful reference to the results of physical examination, assisted if possible by *x*-rays. Blind puncture should never be practiced about the pericardium. Many successful punctures have been made in the upper part of the area, in the third and fourth interspaces in either side. The writer does not like them on account of the inferior drainage, and on account of the greater risk, on the right side especially, of injuring the auricle. A lower point on the right, as the fifth interspace in a case with Rotch's sign well marked, is safer. If the apex beat can be distinguished inside the line of dulness, and especially if dulness increases below the apex, the fifth or sixth interspace on the left, inside the line of dulness, is to be recommended. As Romberg points out, the danger of infecting the pleura is not to be considered—in fact, the pleura can be aspirated on withdrawing the cannula from the pericardium.

But the best place for aspirating in case of extensive exudates, and perhaps even in smaller ones, is the lower part of the pericardium, entering from the left costophrenic space. This point is preferred by Shattuck, Fitz, and Osler, and it is becom-

ing more and more favored for radical operations.

If puncture is negative in the location first chosen it should be repeated with a change of position of the patient, and if still negative in another place. In many cases puncture is negative in one place, positive in another; or negative with the patient recumbent, positive when sitting up or leaning forward.

When found, the fluid should be removed as completely as possible. Sometimes removal of a small quantity for examination has seemed to stimulate absorption, as we see in pleurisy, but complete or repeated aspiration is often necessary. A case of Döbert's is instructive in connection with some of the statements just made. At intervals of four days he obtained 130, 150, and 200 cubic centimeters of fluid; still later, 500. In another case he withdrew 12 cubic centimeters on the right side; later, 400 cubic centimeters on the left side, none on the right side while lying down, but 300 cubic centimeters on raising the patient.

The immediate effect of successful paracentesis of the pericardium is often very striking, especially in cases with marked pressure symptoms. The curative value is much less, as the fluid is likely to recur. The finding of considerable exudate soon after tapping has been explained by some as an agonal or post-mortem phenomenon, but this is not probable. On the contrary, there is a growing conviction of the imperfection of such operations. Partly from this, partly from the danger of working in the dark in so important a locality, more radical operations on the pericardium are being more frequently advocated. They are not, however, sufficiently common to be appreciated as they deserve.

The bistoury and lancet are sometimes used to puncture the pericardium, but the operation came in time to be an incision, and even this became modified. Removal of the bony or cartilaginous thorax was proposed early, but until recently most operations were made through the interspaces. These had certain inconveniences,

such as limited room, and certain dangers, such as injuries of vessels, and as these became more clearly understood more formal operations—that is, resections of costal cartilages—were practiced. The fifth interspace near the sternum was most frequently selected for incision, or if resections were to be made the fourth or fifth left costal cartilage, or both of these, were removed or recommended for removal. Removal of part of the sternum as a preliminary to opening the pericardium is probably an old idea. It is said that Riolan the younger suggested trepanning that bone, but there are some contradictions in the references, and the writer has not been able to see the original. It is possible that Riolan suggested two routes, trepanning the sternum and incision in the costoxiphoid space. If so, he was just about in the position now occupied by many surgeons. Very recently J. H. Bacon has advised trephining the sternum opposite the fifth interspace as anatomically most correct, and giving easy access to the pericardium with the best drainage.

This method, however, shares with many others the disadvantage of making the opening, at least in many cases, over the heart, and that organ is likely to prevent drainage by pushing up against the opening. A much more promising site is that proposed by Larrey, as the result of clinical observation in a case of stab wound of the epigastrium, penetrating the pericardium. It was recommended by J. B. Roberts as long ago as 1880, but actual interest was first given to the matter by Ogle and Allingham, twenty years later. Since then Allingham has reported additional operations, and has been followed by Pendlebury, Mintz, Jaboulay, Berard, and Pehu. Roberts feared that the situation would not give sufficient room, an objection that has been made by more recent writers, but clearly shown to be erroneous by Allingham. If the costoxiphoid space is narrow, as it often is in adults but rarely in children, it is easy to resect part of the seventh cartilage, as in Mintz's operation, or, if desired, the sixth. Porter objects to the epigastric

operation on account of the risk of wounding the pleura or diaphragm. But none of the positions above the sixth rib are free from the danger of meeting the pleura, for it sometimes extends under the sternum. In any position care must be taken, and the operator must realize the anatomic and technical details.

TREATMENT OF ITCHING.

To the *Journal of the American Medical Association* of July 27, 1907, BULKLEY contributes an article on this subject. The local measures which may be employed with advantage for the relief of itching belong to two classes: (1) Hygienic, and (2) medicinal.

The proper hygienic treatment of a skin affected by itching is very important, and unless correctly attended to the condition may not yield even to otherwise good treatment. From long observation he is convinced that many, who have the facilities for it, bathe the skin far too much and often keep up a pruritic state. The normal, healthy skin should have a certain amount of greasy or oily secretion, and when this is too frequently removed by bathing and free use of soap the surface becomes dry and harsh, and its abundant nerves are thereby irritated. Unless caution is given and full directions are insisted on, those in the better classes of society will surely transgress in this particular. Also in drying after bathing, patients will exercise to much friction, and then the overstimulated and excited skin will give occasion for more or less scratching, and the trouble is prolonged in spite of the best treatment. The author frequently directs that the skin be dried, whenever a bath is allowed, by soft, old hand towels, not ordinary bath towels, a number of them being used, which have been thoroughly heated.

The kind of underclothing is also sometimes of consequence, although he thinks that its importance is frequently overestimated. He believes that most skins are better with pure woollen garments next to them if the texture is fine and unirritating,

although he finds that a number do well with the linen mesh garments. Cotton is undesirable, and he does not ordinarily favor silk. But he constantly finds that if all other treatment is correct, and the skin properly cared for, many persons can wear woolen underclothing who previously thought it impossible.

Restraint from scratching comes properly under this head, and is, of course, particularly desirable in the case of infants with eczema. For this purpose the author has for many years employed the very simple device of putting the child inside a small pillow-case, the head protruding through a hole made in the closed end. This is pulled down to the shoulders, and the arms are secured at the sides by means of several strong safety-pins, and one pin is also fastened between the legs, so that the whole wrapping cannot be raised. Time and again mothers have expressed the warmest appreciation of this device, which has completely controlled the child, and allowed proper applications to cure the eruption. It is well to remember that itching often ceases if the part is not touched or scratched. A good apparatus has also been put on the market under the name, the author thinks, of "Scratch Not;" this consists of celluloid sleeves, to be fastened at the shoulders, which prevents the child from bending the arm and reaching the face. Another patented affair is sold under the name, the author thinks, of "Hold hand," which consists of perforated aluminum balls, into which each hand is placed, with a sleeve attached, which latter is pinned to the clothing. This is also valuable to prevent thumb sucking.

Even in adults it is sometimes necessary to devise means to prevent scratching, such as gloves, etc. The author has sometimes tied tape to the wrists and had it passed beneath the back, so that the effort to reach the face, or the other part affected, will waken the patient.

The medicinal means which have been recommended at one time and another and used locally for the relief of itching are so numerous and varied that any attempt

to classify or even to mention them seems almost hopeless. From the multiplicity and variety of remedies proposed it is readily understood that there is no one single efficient means at our command to stop itching. This, of course, follows from what has been said in regard to the different causes which may produce pruritus. Each case has to be studied by itself and suitable measures employed to combat the real disease present. Carbolic acid alone stands preëminent, and when rightly employed is certainly a valuable remedy, and is a constant addition to many applications for the relief of pruritus.

The external applications which more or less control pruritus as a symptom may be divided into those which are (1) soothing and (2) analgesic; both of these are used in the form of lotions and ointments.

The calamine and zinc lotion, so widely known, is one of the best mild, soothing applications in many pruritic conditions. The formula which the author employs is composed as follows:

R Phenol (acidi carbolici), 3ss-3j;
Pulv. calamin. prep., 3j;
Zinci oxidi, 5ij;
Glycerini, 3iij;
Aquæ calcis, 3j;
Aquæ rosæ, q. s. ad 5iv.

M. Sig.: To be sopped repeatedly over the surface.

Ichthyol is a very valuable remedy, and in from 10- to 25-per-cent solution, in water or oil, will often act very efficiently; it is also very valuable in ointments.

The liquid picis alkalinus, which the author introduced some years ago, is also serviceable. It is made as follows:

R Picis liquidæ, 3iv;
Potassii causticæ, 3ij;
Aquæ, 3x.

M. The potash is dissolved in the water and rubbed up with the tar in a mortar until perfect solution is effected. This is to be diluted in varying strength, one part to ten or to twenty of water, and bathed over the surface, a suitable ointment being applied afterward.

Lead and opium wash is often employed and occasionally will be found effective, but as a rule it does not answer so well as other remedies.

Ointments are constantly employed to

relieve itching, and if properly constructed and efficiently applied answer well, although often annoying to the patient. For rather mild general itching a carbolized compound lanolin ointment, such as the author has often designated "skin food," is valuable, made as follows:

℞ Phenol (acidi carbolic), gr. xx-xl;
Lanolin, ℥j;
Boroglycerin, ℥iv;
Unguenti aquæ rosæ, ℥iij.

M. This is applied with the palms of the hands and gently rubbed in until all is absorbed.

TREATMENT OF BURNS AND SCALDS.

In the *British Medical Journal* of August 3, 1907, SUTCLIFFE, a surgeon of the British navy, states that there are many disadvantages in the use of oily dressings as a whole.

1. The oil is not sterilized and has no antiseptic properties. Even if sterilized shortly before use organisms are found to gain access to the dressings, and the oil forms a very suitable medium for their growth.

2. An oily dressing will not absorb any of the discharges. Now these, in severe burns and scalds, are free and must be so from the nature of the injuries, and any dressing which keeps these discharges in contact with the absorbing surface of granulations invites the onset of severe constitutional symptoms.

3. The oily dressing must be changed in twenty-four hours, for by then it will be foul and septic.

In cases of severe burns and scalds the shock caused by the first dressing is always a serious consideration and may be fatal. Therefore, the longer we can postpone the first dressing the better for the patient, to whom every hour is of advantage in his recovery from the preliminary shock of injury, and this delay may be obtained by the use of lotions.

4. The oil is a dirty dressing from the point of view of the nurses and medical officers, etc. Sheets and linen become saturated with the oil, and everything about the patient has a sickly, offensive smell, which is very trying after inhaling it for

three or four hours, and which clings to the hands and nostrils for the remainder of the twenty-four hours, so that one is never free from the smell so long as the case is under treatment.

5. The parts having been once bathed in oil, it is well-nigh impossible to cleanse them and apply other dressings. One has to wait patiently until little by little the oil is removed and the parts are rendered clean and in a condition to respond to treatment.

6. The space occupied by a sufficient quantity of oil to meet all emergencies is considerable, and in a modern man-of-war, where every department clamors for more room for the stowage of gear, the medical officer is thrown back on the sick-bay, which tends to be overcrowded with the various chests, etc., carried.

This may be a comparatively small matter, but if we can reduce with advantage the bulk of stores carried it will be a gain to the comfort and working of the sick-bay, and should, therefore, be done.

7. Carron oil has no healing property *per se*, and sooner or later it must be changed if we are to obtain a rapid or satisfactory result—rapidity of cure should certainly be one of our first thoughts.

Lotions.—In these the author believes we have the most rational form of dressing for cases of burns and scalds. He is willing to argue in their favor in the same order as he does the disadvantages of the oils.

1. The water used in making the lotions is easily sterilized, and the lotions being antiseptic, organisms will not grow on such a dressing, even though they gain access to the part.

2. The inevitable discharges are absorbed by the dressing, and the active principle of the lotion prevents the growth of organisms, the dangers of constitutional symptoms being thereby averted.

3. A dressing moistened by a suitable lotion may be left *in situ* for at least forty-eight hours, and this the author considers a most important—indeed, the most important—point in favor of the use of lotions. Take, for example, the case of a burst tube in the engine-room, or explosion of a cart-

ridge whilst firing is in progress. The patients are scalded or burnt from head to foot, and the shock is very severe. The first dressing is applied, and the men are forthwith landed and taken to the nearest hospital.

The unavoidable movement and discomfort entailed in transit does not tend to improve the general condition, but once in a hospital bed, in comfort and quiet, the patient has more chance of combating the shock. Therefore the forty-eight hours' rest before the second dressing is invaluable, and the same remarks (modified) apply if the patients cannot be landed but have to be treated on board their ship.

4. Lotions are clean, not only surgically but also from the point of view of nurses and with regard to linen, etc. Certainly one important dressing, namely, picric acid, will stain the sheets a yellow color, but this is preferable to oil, and is by comparison clean.

5. The lotion clinging to the parts from the dressing is easily removed should any subsequent treatment be adopted.

6. The space occupied by any drug from which we make our lotions may be neglected, and is small compared with that taken up by more bulky oils.

7. Lotions have healing properties *per se*.

Here the author comes to the choice of lotions. Those in most common use are perchloride of mercury, boric acid, and picric acid.

Perchloride of Mercury.—The risk of absorption of this drug from the large granulating surface of wounds such as we are dealing with is too great to admit of the free use of this lotion. If used it must be so diluted that its antiseptic properties are greatly impaired.

Boric Acid.—In boric acid we have a most useful drug; it is antiseptic, stimulating to the new tissue, does not cause irritation, and is free from any risk of causing poisonous symptoms. The chief drawback is that it has no anesthetic effect, and this drawback is especially felt when the choice of the first dressing arises, for at this time anesthesia helps to diminish

the degree of shock. In the deeper burns, where the nerve endings are destroyed, this disadvantage disappears, and the drug may then be chosen.

Picric Acid.—As picric acid has been more used than any other drug during the last ten years, and as it has all the advantages of boric acid plus that most important one of relieving pain in cases of superficial burns, the author believes it to be especially useful as a first dressing, as it may, in addition, be left for forty-eight hours before being changed.

This application fulfils all the advantages mentioned in favor of lotions: (1) It is sterile and antiseptic; (2) the discharges are absorbed; (3) it may be left for forty-eight hours; (4) it occupies small space; (5) it is stimulating to the new tissues.

With regard to No. 4 of the above list the author makes mention that a five-per-cent solution is the strength required, so that one ounce of salt will make over ten pints of the lotion.

Cases of poisoning have been reported as the result of the use of this acid; the author asserts he has used it in many cases and seen it used in many others without any symptoms appearing, so that this possibility does not seem of sufficient importance to condemn its use. One property, however, it does possess which has prevented it from being brought into use afloat—that is, the explosive nature of the dry crystals.

According to V. B. Lewes, F.T.C., F.C.S., in service chemistry, picric acid is a pale-yellow crystalline body, having the form of plates or prisms, little soluble in cold water, readily in alcohol.

On heating the crystals to 122° C. they fuse with partial sublimation, and explode at a slightly higher temperature. From a treatise on service explosives the author gathers that the crystals melt at 125.5° C. (252.5° F.) to a yellow liquid, which may be distilled by carefully heating without decomposition. Heated briskly to 300° C. (572° F.) in the open it burns rapidly; if confined it explodes.

From this it would appear that there is

little danger in the careful use and storage of this acid, and the fact that it is used in the large hospitals of London and the provinces without special precautions as to storage enhances this view.

Nevertheless, so far as the author has been able to ascertain, this acid is not used in the merchant service, and it comes under the head of explosives so far as shipment is concerned.

The author has discussed the subject with several gunnery officers, who all agree that, kept in the cool and unconfined, there is no danger in picric acid. Even granting that the acid is not perfectly safe, he thinks a few ounces might with safety be carried in men-of-war, where there are always experts on matters of explosives to give advice as to storage. He is himself such a firm believer in this acid that he is loath to exclude it even though some risk be run.

In war time burns and scalds will be numerous, and the medical officers of the navy will have a tremendous strain put upon them, and every hour of the day will be fully occupied. Daily dressing will be therefore almost an impossibility, so some form of lotion must be used in the place of the oils.

Before concluding the author refers shortly to the scalds seen in the service as the result of bursting of steam pipes. At an ordinary working pressure the temperature is about 400° F. Tubes burst owing to the blocking and increase of pressure, so that it is impossible to tell the actual temperature of the steam at the time of the accident. The effects, however, are seen in the instantaneous death of such exposed parts as the hands and forearms, feet and legs, the whole of the albumen of the tissues being coagulated and the circulation being arrested.

In these cases our one object is to keep the parts as aseptic as possible, and a lotion of perchloride of mercury is perhaps the most suitable, as no absorption of the lotion can take place from the dead parts, and the antiseptic properties of this drug are well known. Should the patient recover sufficiently from shock, an early amputation

is the only rational treatment. In the cases the author has seen this has been impossible, and the patients have never recovered from the preliminary shock. To sum up: Use lotions in the treatment of burns and scalds, for they are sterile, discharges are absorbed, and the dressings may be left forty-eight hours. Do not use oils, as they keep in the discharges, must be changed every twelve hours, and are not aseptic.

The author regrets that this paper has had to be written in haste and under difficult circumstances, and he has been unable to consult authorities as he could have wished. With reference to the recent war between Japan and Russia, he can find no literature dealing with this subject, and he is informed that nothing has yet been published. He hopes that he has made enough remarks to lead to a profitable discussion on the subject.

Inspector-General Porter considers it clear that the use of all oily substances as dressings for burns should be abandoned. They impede the subsequent application of antiseptics, which must be used if we are to keep clear of septicemia.

THE TREATMENT OF MUCOMEMBRANOUS COLITIS.

KING states in the *Scottish Medical and Surgical Journal* for October, 1907, that dietetics undoubtedly form an important factor in treatment. At the present time German physicians favor a diet rich in cellulose material, leaving a large residue, while French physicians are in favor of one leaving as little residue as possible. Germain Sée states that there ought to be no special restrictions in the dietary—eggs (cooked rather hard), milk, ham, water, and tea *ad libitum*, potatoes, rice, game, etc., may be taken, avoiding fruit, alcohol, effervescing waters, red and white wines. It is noteworthy that Langenhagen states that green vegetables appear in the stools almost unchanged, and that fats also are hardly ever digested. Hence Germain Sée excludes fats and vegetables from the dietary. Hale-White gives a simple mixed diet—

i.e., plenty of fish, meats, eggs, milk pudding, corn-flour, infants' food, buttered toast, bread and milk. He states that he has not seen any good follow a diet of a large amount of indigestible vegetable material. Von Noorden advocates a coarse cellulose diet, especially bread in large quantity combined with excess of butter, cream, and milk—one leaving a large residue. This dietary is the main feature in his method of treatment. His researches are certainly well worthy of careful attention.

As far as drugs are concerned, there is almost a unanimous opinion at the present time amongst those experienced in the treatment of this affection that there is no specific remedy, although many of them are of considerable value if judiciously administered; in fact much harm is done and valuable time wasted in their almost exclusive and injudicious use, and this applies with special emphasis to the so-called intestinal antiseptics (salol, B-naphthol, etc.). The drugs which have been considered of value are belladonna, strychnine, hydrastin, hyoscyamus, cannabis indica, ergotin, salol, B-naphthol, and the salicylates. With the exception of the former two, which, if properly administered, may be of assistance in the relief of the constipation, the others may be considered useless and often harmful.

The author holds that in any ordinary simple case, and occasionally it may be in some others as well, especially if they are treated at an early stage, many of the various methods of treatment now in vogue, if carried out efficiently, might give an almost equally good immediate result. The numerous literary contributions prove this to be the case. The question arises, What becomes of many of these in the course of a few years? As one would expect, statistics remain silent on this point. Experience, however, teaches us that a large number relapse. It is also to be borne in mind in this connection that many of the cases which are diagnosed and treated as such are not those of true mucomembranous colitis at all, but are examples of the effects of

chronic constipation pure and simple, which are decidedly more amenable to such treatment.

It may be stated that the great object of treatment should be directed toward bringing about such a condition of the large intestine as to give rise to a normal response to fecal stimulation, and consequently a normal condition of peristalsis, at the same time employing measures direct or indirect toward the highest improvement in the patient's general condition, and to the amelioration or removal of the neurotic condition. As to the treatment of the intestinal condition from a dietetic point of view, if we regard it as of a traumatic inflammatory nature it might be said that foods leaving a large residue would aggravate and intensify it, and so give rise to diarrhea. Practical experience, however, tells us that this is not so. This result has been pointed to as a proof that the intestinal condition from a dietetic point of view. The author does not believe that any such conclusion can be drawn. It must be remembered that we are not dealing with a specific infective inflammation, but with a low traumatic one on a mucous surface. As formerly pointed out, we may have all the symptoms of intestinal catarrh present during life, and nothing found in the intestine post mortem to account for them, and also we may have ulceration in the colon, with no diarrhea or even other ordinary symptoms indicative of its presence.

INEBRIETY: ITS CAUSATION AND CONTROL.

In the course of an article on this subject contributed to the *British Medical Journal* of October 19, 1907, BRANTHWAITE says that it cannot be stated too definitely that all influences which incite or strengthen moral resolution are useful only when applied to inebriates whose mental condition approaches the normal. Success as the result of such methods will always be in inverse proportion to the amount of existing defect. If an inebriate possesses a fairly-developed moral sense, some measure of control over impulses, and moderate power

of judgment, these attributes, or the exercise of them, may undoubtedly be strengthened by various influences; but if such qualities are rudimentary or badly warped, the outlook is bad. The influences which fall within this category are practically those which substitute for free volition temporary dependence upon a course of life ordained by others. As instances the writer has known a few inebriates who have ceased their drunken habits and have apparently regained complete control over themselves as the result of religious enthusiasm. He has also known others who have been able to attain the same end through the mere influence of persons of strong individuality, in whom they had confidence, and under whose direction they were willing to order their lives. There have also been cases apparently cured by hypnotic suggestion, and a fair number have recovered through the agency of faith cures, quack medicines, and other measures closely approaching humbug. All these influences have been known to produce good results, dependence and trust having temporarily supplanted free agency, until some amount of self-control has been regained, and the patient finds himself able to stand alone.

Owing to an imperfect recognition of the mental aspect of habitual drunkenness, much more reliance has been placed upon the value of drugs than is warranted by results. In Branthwaite's opinion drugs are extremely valuable—indeed, necessary—for the relief of unpleasant symptoms during the transition from long-continued drunkenness to enforced sobriety, and to avoid many complications which may occur during this period of "knocking off." They are also necessary when acute symptoms of alcohol want have disappeared, as aids to the removal of temporary damage resulting from excessive indulgence, and to help toward recovery to good physical health. Any person who attempts to treat habitual drunkenness without the use of drugs for these two purposes is neglecting potent influences for good. Further than this the author is not prepared to accord any value to the administration of drugs, and his reit-

erated belief in the mental origin of drunkenness renders it unnecessary for him to state an absolute unbelief in the possibility of the existence of a specific.

Some mention should be made of hygienic measures as essential factors in the medical treatment of habitual drunkards after the acute stages are passed. Regular life, good food, work, and amusement, are all necessary—in short, all the same principles must be adopted which are found desirable in the treatment of the insane.

The author sees no reason to object to the exercise of every possible influence which might conceivably produce good results before physical control is resorted to; the attempt to avoid restraint is both natural and desirable. Experience shows, however, that resort to physical control is too often delayed until it is useless to apply it, too much valuable time being wasted by mild measures, notwithstanding proof of worthlessness and repeated failure. By all means let every chance be given of possible benefit by other methods, but when failure results no further delay should be permissible in the best interest of the patient. Control should be applied before the original defect is increased by added degeneracy. Some persons are sufficiently normal to be amenable to moral influences, others are not; when the latter require to be dealt with, no efforts will have a reasonable chance of success in the absence of compulsory control. The first principle in the treatment of habitual drunkenness is the removal of alcohol. If by the exercise of ordinary home influence abstinence can be secured, well and good: medical treatment and moral influences can be applied with some hope of success; but when a patient cannot be so restrained, all else is worthless. All inebriates must require control in some form or other, because they are admittedly incapable of self-control, otherwise they would not merit their designation. The amount and character of control necessary for each individual depend entirely upon his mental state; if he is too bad for effective home control, something more powerful should be applicable to his needs.

It has been argued that, if sufficient defect exists to prevent good result from mild measures, control and enforced abstinence are not likely to be of any avail. It is only necessary to watch some cases in reformatories to see how wide from the mark is this statement, and what advantage might result, even to some of the worst, had earlier control been applied. Moreover, the author has known very many persons admitted to retreats, apparently hopeless, who have left, after some months' detention, free from all signs of abnormality. The subsequent history of such cases, after ten to fifteen years has elapsed, justifies a hope of good result from enforced control, even in some apparently hopeless cases, certainly in many which have been unaffected by milder measures.

With reference to treatment and control, the main points the author wants to emphasize are: (1) The necessity for greater attention to neurotic and psychopathic indication; and (2) the necessity for an earlier recognition of these conditions, with a view to the timely exercise of effective control in cases which cannot possibly be benefited by milder measures.

TREATMENT OF CHILBLAINS.

C. RITTER has applied Bier's method of artificial hyperemia to the treatment of chilblains and other forms of frost-bites, but finds that the method does not appear to be at all generally used (*Munch. Medicinische Wochenschrift*, May 7, 1907). In spite of the enormous numbers of reputed cures for chilblains, the complaint may be said to resist all forms of treatment, and Lassar in 1902 wrote that the practitioner is not able to do much for it. The author believes that this is due to the fact that all the remedies aim at dealing with the symptoms, and therefore discusses the nature of the ailment before describing the hyperemia treatment. When a skin area is exposed to the effect of severe cold, the result is a marked anemia. This is even true for the face, although one generally sees red faces in persons who have been exposed to great

cold, and hyperemic areas when the cold has been moderately severe. The reason of this is that the face being exceptionally well supplied with blood vessels which react very delicately, the hyperemic reaction which follows the anemia sets in very early. The next stage of cold acting locally is a reactionary hyperemia. If one renders a limb bloodless, and then applies cold to one point, on removing the bandage the whole limb becomes hyperemic, and only after the limb has regained its normal color does one see that the affected area is still very red. It thus appears that the hyperemia is secondary, and in Ritter's opinion this hyperemia is not harmful, but rather the reverse.

On one occasion the author was applying Bier's hyperemia to the arm of a boy for a tuberculous lesion. This boy had a chilblain on his finger. During the course of treatment the ulcerated chilblain, which was merely covered with aseptic gauze, healed up firmly and rapidly. He therefore extended the treatment to chilblains and frost-bites whenever he got a chance, and found that the results in his 150 cases were undoubted. He points out that the hyperemia of cold is not produced by stasis. It is a real congestion, and the slowed circulation is only the result of a larger vascular area. The result of the primary anemia in chilblain is, as has already been said, a secondary anemia. But this is not a necessary result of an artificial anemia. It seems that a local damage to the tissues has been effected by the cold, and when this damage is well marked one can see the effect later when gangrene sets in. In milder cases the damaging effect on the tissue cells can be plainly seen by the microscope.

The writer next found that when he applied Bier's constricting bandage, while the whole limb became bluish-red, as indicating a venous hyperemia, the frozen area remained an arterial red. He has come to the conclusion from these considerations, and from several others, that the hyperemia of chilblains and frost-bites is a mild inflammatory reaction which the body uses as an attempt to repair the damage done, and therefore, if it is possible to increase this

hyperemia either by inducing a venous hyperemia according to Biér or by applying hot air (arterial hyperemia), one will assist the body in curing the affection. It is not always possible to produce a passive hyperemia in anemic persons. He therefore finds that Bier's bandage acts best in acute cases, and in chronic cases occurring in fairly healthy persons. The hyperemia should be applied for from six to twelve hours, and a pause of at least two hours daily is advisable. The bandage can be worn while the patient is following his occupation. The action is always beneficial. The author has never seen a case in which it increased the symptoms. The most marked effect is that the itching is stopped very rapidly. The affected area becomes more pliable within a short time, and healing takes place sooner than with any other form of treatment.

Next he deals with his cases treated with hot air. Those best suited to this treatment are chronic cases, even those affecting anemic persons. It not only always acts rapidly and never fails, but it can also be used successfully as a prophylactic means. Both the hot-air treatment and the hyperemia by bandage lessen the chances of gangrene.—*British Medical Journal*, Oct. 19, 1907.

ARSENIC IN CUTANEOUS EPITHELIOMA.

SERRA (*La Riforma Medica*, May 25, 1907) gives his experience in the treatment of cutaneous epithelioma by means of an application of powdered arsenious acid (1 gramme) dissolved in ethylic alcohol and water (ää 75 grammes). The fluid (after being well shaken) is painted freely over the diseased surface, and allowed to evaporate freely, no dressing or bandage being applied. The pain is as a rule acute, but does not last long; fresh applications are made each day over the yellowish crust, which is not disturbed. The strength of the solution is increased to 1 in 80, and after the tenth or fifteenth application the crust (which has become darker) may be detached, and fresh solution applied to the

wound. If after this application the crust is only very slight and easily removed, one may conclude the diseased tissue is destroyed, and the wound may be treated on ordinary lines. Of the four cases reported by the author, all were cured by this method of treatment in an average of about fifty days, including the after-treatment of the simple wound left after the diseased tissues have been destroyed. In the fourth case the author used an ethereal and alcoholic solution without any water, and bound the parts up, which seemed to cause less pain. In all the four cases the epithelioma was of a vasocellular structure, and affected the skin only. In another series of four cases of a more malignant type the treatment gave decided relief, but could not be said to bring about a cure in any of them.—*British Medical Journal*, Oct. 19, 1907.

TREATMENT OF HEMORRHAGIC CONDITIONS WITH FRESH BLOOD SERUMS.

Physiologists have shown the favorable action of calcium salts on the coagulation of blood, and Sir A. E. Wright has pointed out their value in the treatment of hemorrhagic conditions. Physiologists have also shown *in vitro* that incoagulable blood recovers its coagulability on the addition of fresh serums, but curiously the hemostatic value of such serums in man has never been tested. M. Emile Weil has found that *in vitro* the addition of fresh serum completely corrects the various defects of coagulation of the blood of hemophilics. The same effect is produced *in vivo* by injections of serum, and the patient whose blood has become normal comports himself as a normal person. He recommends the following technique:

For dyscrasic hemorrhages in adults 15 cubic centimeters of fresh serum should be injected into the veins, or 30 cubic centimeters under the skin. A second injection may be given without ill effects two days later. In children half doses may be given. The serums of man, the rabbit, the horse, or the ox are equally efficacious, but *in vitro* human serum has a more marked effect on

defective coagulation. The serum should not be more than a fortnight old. Ox serum, though very active, should not be used. It was the only serum which produced ill effects; these occurred immediately after injection and were always fugitive, but sometimes marked. They consisted of considerable rise of temperature, rigors, cyanosis, vomiting, headache, and backache. In hospitals human serum is generally available; in private practice rabbit serum may be obtained easily by antiseptic bleeding from the carotid artery. Antidiphtheric serum may be used, but simple serum is preferable. In one case a tooth was extracted twenty-five days after the injection of serum without notable hemorrhage, and in another case the operations for empyema and incision of a perinephritic abscess were performed without any remarkable hemorrhage two days after the injection of 20 cubic centimeters of fresh horse serum. In a third case a patient who had hemarthroses every month ceased to suffer for eleven weeks.

In a fourth case hematuria which had lasted for a month diminished and ceased in three days. In purpura, whether primary or secondary, acute or chronic, excellent results were also obtained. A woman, aged fifty-one years, addicted to alcohol, was admitted into hospital on September 19, 1905, with febrile polyarthrititis. Her gums were fungating and bleeding and there was epistaxis. On the 23d subconjunctival hemorrhages, large purpuric spots on the limbs, and intense hematuria appeared. An intravenous injection of 15 cubic centimeters of ox serum was followed by remarkable improvement. On the following day the temperature fell from 102.2° F. to 99.5°; the urine was almost clear; the gums were no longer fungating or bleeding; and the arthritis had disappeared. In another case a man had been suffering for three days from intense hematuria, the urine consisting of almost pure blood. There were also purpura, in the form of large ecchymoses, melena, and fungating and bleeding gums. The temperature was 102°. This state was a sequel of typhoid fever, complicated by

double pneumonia. The urine contained innumerable pneumococci. The blood showed delayed coagulation and want of retraction of the clot. Thirty cubic centimeters of antidiphtheric serum two days old was injected under the skin. On the following day the gums no longer bled and were not fungating, and the renal hemorrhage had much diminished. On the next day there was not a trace of albumin or blood in the urine, and the temperature was 99.3°.

The following is an example of the results obtained in chronic purpura: A man, aged forty-two years, addicted to alcohol, had a large liver, articular pains, and purpura of the legs and arms. During three months ten eruptions of purpura occurred, and the articular pains alternated with abdominal crises. The urine constantly contained blood, and there was prolonged hemorrhage whenever the patient cut himself in shaving. Fifteen cubic centimeters of ox serum was injected on July 22, and the hematuria, purpura, and pains disappeared.

M. Emile Weil concluded that fresh serum is an effective remedy for the arrest of hemorrhages in all dyscrasic states—more effective than any other, including calcium salts. If these observations are generally confirmed we have at our disposal a most important therapeutic measure for the treatment of these conditions.—*St. Paul Medical Journal*, July, 1907.

THE TREATMENT OF POSTPARTUM HEMORRHAGE.

ELLIOTT (*Bristol Medico-Chirurgical Journal*, June, 1907) contributes a most interesting case, which apparently demonstrates beyond controversy the value of aortic compression in the treatment of postpartum hemorrhage. He notes in his comments that the aortic pressure not only stopped all bleeding, but also influenced shock by cutting off the blood-supply in the lower extremities, and so increasing the amount of blood in the heart, lungs, and nerve centers. Elevation of the pelvis probably contributed greatly to this desired end. He combined this method with saline

infusion subcutaneously. The patient reported had unusually well-developed abdominal muscles, and in addition was highly neurotic. None the less there was no difficulty in reaching the aorta, nor did the intervention of a large uterus in the least prevent compression being carried out. Compression by the help of an assistant was made continuous for five hours. In changing this compression the fist to be applied was always firmly pressed on the blood-vessel below the other fist, and by this maneuver no blood was lost in changing pressure. Injury to the sympathetic nerves and compression of the vena cava were avoided in the one case by changing the point of pressure from time to time along the available part of the aorta; in the other by swaying the first sideways before finally compressing the aorta. During five and a half hours between 10 and 12 pints of fluid were transfused. The pressure was applied with the clenched fist through the abdominal walls to the uterus, the patient's legs being elevated and firmly bandaged from instep to the groin, and the head of the patient being lowered by elevating the bed on two chairs.

ACUTE DIVERTICULITIS OF THE SIGMOID WITH INTRA-ABDOMINAL ABSCESES.

BREWER (*Annals of Surgery*, July, 1907) presented a case of this character before the New York Surgical Society in August, 1902. The patient was suddenly seized with violent pain, nausea, and faintness. This attack proved transitory in its great severity, but was followed by more or less pain in the abdomen, because of which twenty-four hours later he called in a physician, who pronounced the case one of colitis, for the treatment of which the patient was confined to bed for five days, suffering with pain in the lower left quadrant of the belly, accompanied with fever and general malaise.

When Dr. Brewer first saw the patient his temperature was 103°; pulse, 110; leucocytes, 17,000. There was marked rigidity of the left rectus muscle, and a tender mass

in the iliac fossa. An incision was made over the most prominent portion of the tumor, entering a large abscess containing about four ounces of pus and a pelvic concretion. On washing out the abscess cavity a small ulceration was seen in the wall of the sigmoid, through which there was a slight fecal discharge.

THYMUS GLAND TREATMENT OF CANCER.

GWYER (*Annals of Surgery*, July, 1907) advocates powdered thymus gland in doses of 1 to 4 drachms four times a day, with sodium phosphate half an ounce once a day for eliminatory purposes. Calf gland is used. It is received fresh, and the gland is cut up and dried at a low temperature by a forced draft of air; it is then ground and sifted to a uniform powder. It is administered stirred in water about an hour before meals.

The watery extract is prepared as follows: To eight ounces of a solution of sodium chloride (four grains to the ounce) add a drachm of the dried powder, and a little thymol. It is then strained and filtered as rapidly as possible. After straining acetic acid 50 per cent c. p. is added, using a 20-per-cent solution, with stirring, until a point of acidity is reached which gives good flocculi on standing a minute or two. The precipitate is separated by filtration and redissolved in a solution of sodium carbonate (three-quarters of a grain to the ounce of water), using about one and a half ounces of the solution. This solution is filtered twice, and to it is added acetic acid to acidity and good precipitation.

The precipitate is again separated by filtration and redissolved in a solution of sodium carbonate (one grain to the ounce of water), using two drachms of the solution and adding thymol. This final solution is filtered three times or more, and with a crystal of thymol will keep good in a refrigerator for an unknown time. Each drachm of the solution represents the products from half a drachm of the dried gland. The process for the production of an ounce

of the extract takes about six hours. Distilled water should be used and the solutions kept cool during manipulation.

The author holds that this watery extract contains the nucleoproteids and the amylolytic enzyme, the latter powerful in quantity. This solution he gives by mouth and hypodermically in doses up to one drachm. Hypodermically it shows no tendency to cause local irritation.

As a result of his treatment he notes that by the use of thymus gland pain is diminished or eliminated. The growth is diminished in size; the use of the thymus gland is followed by better digestion, by more regular action of the bowels, and improvement of the general condition, as evidenced by a clearer skin and eyes, greater energy, and a general sense of health and well-being. The dosage is still experimental. It is possible that the use of this remedy may cause a rapid disintegration of the new growth and hence violent autointoxication, as suggested by two of the cases in which the tumor rapidly reduced in size. He believes that the rapidity of the cure will be found to be in direct proportion to the rapidity of development.

THE ROLE OF THE VARIOUS ELEMENTS IN THE DEVELOPMENT AND REGENERATION OF BONE.

MACEWEN (*British Medical Journal*, June 22, 1907) states that the present inquiry has been undertaken with the view of obtaining data, chiefly by direct experiment, as to the rôle which the various elements play in the development and reproduction of bone. This communication deals with a part of the subject under two heads: (a) the potentiality of the periosteum as a factor in the production of bone; and (b) the regeneration of bone from proliferation of osseous tissue. The following is a brief summary of the paper:

(a) *Potentiality of Periosteum as a Factor in Reproduction of Bone.*—(1) To test this, a complete cylinder, constituting a portion of the shaft of a long bone, was removed, while the periosteum was preserved

intact. This showed, ten weeks afterward, an osseous defect, constituting a gap in the continuity of the shaft. (2) Periosteum free from osseous plaques was removed and transplanted. This was not followed by reproduction of bone, but by absorption of the periosteum. (3) Duhamel's silver-ring experiments are discussed, and the correctness of the deductions drawn therefrom are questioned.

In order to test whether the bone cells or the periosteum produces the bone which covers the silver rings, three experiments, each differing from the other, were performed, in which silver rings were placed on bone deprived of its periosteum, with the result that in each case the rings became covered with bone.

(b) *The Regeneration of Bone from Proliferation of Osseous Tissue.*—The periosteum is shown to be a limiting membrane controlling the osteoblasts, as illustrated in fractures, when the periosteum is intact and when it is torn. The production of callus is not inherently greater in the lower animals than in man—the amount of callus in both depends on the limitation of the periosteum and the amount of movement. (4) Direct experiment, showing that a long bone deprived of its periosteum continues to grow; (5) so also do the flat bones of the skull. (6) Bone may be made to grow in the midst of lacerated muscles by the mechanical distribution of osteoblasts. Observation. Rider's bone. Suggestion as to the production of myositis ossificans. (7) Can shavings of nude bone grow on being placed between muscles in a gap in the continuity of the shaft? Experiment and result seven weeks after show that not only do they grow but that they also proliferate to a very marked extent.

Is there any direct evidence to show that transplanted living bone actually grows and proliferates instead of forming, like blood-clot, a passive framework for the granulation tissue to penetrate, which framework will then become absorbed? There is, as may be illustrated (8) in an instance of bone grown in sponge filled with granulation tissue. (9) To test the osteogenic

power of bone cells constituting the shaft of a long bone, they were grown inside of a glass tube. (10) Intrahuman transplantation of bone. Result 28 years after. Data are obtained from this experiment as to the growth of the humerus from the proximal and distal epiphyseal cartilages respectively. Also as to interstitial osseous increase—evidence of the increase in length of the diaphysis from the epiphyseal cartilage toward which the nutrient vessel runs.

TRAUMATIC RUPTURE OF THE INTESTINES.

BATTLE (*Edinburgh Medical Journal*, June, 1907) reports a number of interesting cases showing the difficulty of diagnosis. In the first instance the blow was not quite sufficiently severe to make exploration a desirable thing in the absence of symptoms. A boy, fourteen years old, slipped and fell, striking his abdomen on a post. He fainted and was taken home, where he complained of great pain in the abdomen, nor could he pass water.

When brought to the hospital he was still suffering from shock. He complained of pain in the lower part of the abdomen. There was slight rigidity about the lower part of the left rectus and tenderness about the umbilicus, which appeared to be superficial. A considerable quantity of clear urine was drawn off. The pulse was of small volume, the temperature 99°. On the following day the temperature, which during the night rose to 103° and the pulse to 120, fell to 101°, with a pulse of 110. Twenty-four hours after the accident he was comfortable, with very little pain and no rigidity. Pain recurred in a few hours, followed by vomiting, rigidity, and rapid pulse. Celiotomy was performed, revealing a perforation seven inches from the commencement of the intestine.

Battle cites a rather remarkable case in which the patient was subjected to operation for peritonitis due to injury. A hernial sac was explored and was found to contain a piece of potato. The opening through which this escaped was of large size.

Though this opening was not found the patient recovered.

Battle states that the only chance of recovery is by early operation. He notes that after traumatism the rupture is usually high up in the jejunum. He cites some cases to prove his contention that at the time of operation the bowel should be sutured after resection of the contused edges as opposed to the formation of an artificial anus. Of the thirty cases under observation at St. Thomas' Hospital from 1887 to 1906 inclusive, five were not submitted to operation; twenty-five were operated on. Of these six recovered, a very high percentage of recoveries.

THE INTERNAL SECRETIONS OF THE OVARIES AND TESTICLES IN RELATION TO THE SECRETIONS OF CERTAIN DUCTLESS GLANDS.

Under this alluring title LLEWELLYN (*Australasian Medical Gazette*, May 20, 1907) elaborates his theory to the effect that the internal secretions of the ovaries or testicles contain one or more ingredients physiologically antagonistic to at least part of the secretion of the thyroid gland, and that such ingredients are the main agents in the neutralization of the thyroid secretion in the body during the reproductive period of life. He advances certain ingenious arguments in favor of this theory which when assembled are most convincing. Llewellyn notes that the main facts to bear in mind are that thyroid fixes calcium in the body and that the ovary eliminates it, and he asserts that myxedema is a condition of chronic calcium intoxication. Disease of any calcium eliminator will cause visible thyroidal changes if the compensators are deficient in energy as compared with the thyroid. The comparative immunity of man from disease of the thyroid is attributed to absence in the testicle of the wide fluctuations in activity seen in the ovary at puberty, menstruation, in pregnancy, and at the menopause; the freer outdoor life of boys, which exercises the genital gland by promoting oxidation, of which it is a regu-

lator; greater power of eliminating calcium in testicle than ovary; the preference of girls for a bread-and-butter diet about the age of puberty.

In three cases the author treated exophthalmic goitre by ovarian substance with suprarenal extract added where there was low tension. His results were distinctly favorable. Discontinuance of the remedies was followed by return of the disease, and continuance by prompt improvement.

Llewellyn states that points worth remarking are: (1) The prompt appearance of a feeling of well-being, long absent, in all cases; (2) in the second case relief of menstrual exacerbation; (3) fall of pulse-rate in all cases; (4) diminution in size of goitres in all cases; (5) marked increase in weight in all cases; (6) improvement in condition of the blood in all cases; (7) in the third case, fall in frequency of stools.

LATE RECURRENCE OF METASTASIS IN CARCINOMA OF THE BREAST.

BIRCHER (*Centralblatt für Chirurgie*, June 29, 1907) notes that as the result of extensive statistical study in numerous clinics more than one-quarter of the patients ultimately suffer from late recurrence. Labhardt announces as the result of his study that when an invalid has once been subjected to the operation for carcinoma he always remains in danger of recurrence. In 2107 collected cases of mammary carcinoma there was late recurrence in 2.3 per cent. Bircher states that in 29.6 per cent of those remaining well over three years recurrence occurs. Wunderli has observed the same in 33 per cent; Poulsen in 18.1 per cent; Hirsch in 29.3 per cent; Schroeder in 19.7 per cent; while Steinthal noted of 99 patients who remained well for three years there was recurrence in 63. The largest number of late recurrences occur in the first ten years. There are about 15 recorded cases in which there was late recurrence in the second and three in the third decennium after operation. Verneuill records the latest recurrence—i.e., thirty years.

INTESTINAL POLYPOSIS AND THE RELATION OF THIS CONDITION TO CARCINOMATOUS DE- GENERATION.

DOERING (*Archiv für klinische Chirurgie*, Bd. lxxxiii, H. 1) on the basis of two cases treated in his own clinic, one of which underwent malignant degeneration, contributes a statistical study of this subject from which he shows that the disease is commonest in men, and is most frequently observed between the fifteenth and the thirty-fifth year, this being an affection of youth. Etiology is unknown. Though the affection is commonest in the rectum and sigmoid, it has been observed even in the stomach and duodenum. The small intestine is partially immune. The flexures of the colon are especial seats of predilection, and hence of obstruction, even in the absence of ulceration. Invagination is a common complication. The seat of carcinomatous degeneration which may occur in young people is usually in the rectum, rapidly growing, circumferentiating tumors or extensive ulcerations forming, over the indurated walls of which the soft polyps project. There is a strong tendency to metastases, particularly in the direction of the liver; at times in the peritoneal cavity or the bones. Following the rectum, the sigmoid flexure is the most frequently involved in cancerous degeneration. Carcinoma secondary to polyposis develops from the fifteenth to the thirty-fifth year.

Polyposis of the rectum, which lasts many years, begins as a chronic catarrh of the bowels. Diarrhea alternates with constipation. In the beginning there may be troublesome tenesmus, rarely colic. Vomiting is rare excepting when obstruction has developed. The most constant symptom is blood in the stool. Direct passage of fresh clots is extremely rare. Combined with the blood is the discharge of thin mucus. This may be very abundant. Diagnosis is based on direct examination. When the rectum is not involved the diagnosis will be suggested by a persistent, long-lasting colonic catarrh occurring in a young person with recurring or persistent blood in the stools.

Occasionally there may be a discharge of detached polyp. Operation may be needful before the diagnosis is cleared.

The treatment of this affection, if it be wide-spread, is of no avail. Strengthening diet, rectal irrigation, and washing out with astringents are indicated. Solutions of tannin have given Doering excellent results. Surgical treatment consists in the shelling out of all the polyps that can be reached. Since the polypoid growth is never limited to the rectum, this is a futile procedure and has led to fatal bleeding. Equally useless is the extirpation of the polypoid rectum. It is indicated only when carcinomatous degeneration has taken place. An artificial anus has been formed in a number of cases, but without particularly good results.

The prognosis of the affection is most unfavorable. Of the fifty reported cases Doering states that there is but a single one which is perchance permanently cured. This one has been followed four years after operation. She was subjected to excision of the rectum.

CARCINOMA OF THE BREAST.

In the *Annals of Surgery* for July, 1907, are found a number of contributions giving the end results of operation for removal of the breast. HALSTED contributes a paper based on his experience at the Johns Hopkins Hospital. He demonstrates the very trifling mortality incident to the operation, in reality less than one per cent. He notes that of 210 traced cases 75 were cured, that in 14 metastases appeared after three years, and that the neck operations are responsible for the great mortality, though this is exceedingly low in all cases and is attributable to late infection in two of the three cases occurring in Halsted's experience.

Halsted quotes Handley to the effect that cancer cells in the blood excite thrombosis and that the thrombosis as it organizes usually destroys or renders them harmless, and expresses his belief that cancer of the breast in spreading centrifugally preserves, in the main, continuity with the original growth, and before involving the viscera

may become widely diffused along surface planes. It is noted that bone metastases in cases of breast cancer rarely occur in areas not actually invaded by the subcutaneous nodules; that the sternum, ribs, spinal column, femur, and humerus, and perhaps also the skull, are the bones most frequently attacked. Distal to the elbow and knee the bones escape cancerous invasion, except in rare instances. It is noted that the liability of a bone to cancerous metastasis increases with its proximity to the site of the primary growth. The belief is expressed that the centrifugal spread of breast cancer takes place primarily in the plane of the deep fascia by way of the lymphatic plexus. Hence the first invasion should fall on the spot nearest the deep fascial lymphatics: this with the femur is at the great trochanter; with the humerus, at or below the insertion of the deltoid.

As to the operation, Halsted believes that part of the chest wall should be excised in certain cases and cautions against restricting the operation with a view to subsequent easy closure of the wound. He advises the use of the actual or Paquelin cautery after incomplete operation; and doubts whether any melanotic tumor of the skin should be removed with the knife, preferring for this purpose the cautery. He calls attention to rare cases in which cancerous axillary glands became demonstrable before primary lesions of the breast, and observes that disseminated pains which often occur in the course of cancer of the breast, and may be so severe as to suggest metastases, are often toxic.

GREENOUGH, SIMMONS, and BARNEY in the same number of the *Annals of Surgery* contribute the end results in 376 operations for carcinoma of the breast at the Massachusetts General Hospital. Of this number 64 are alive and well, at periods from three to thirteen years after leaving the hospital, and with practically no disability. The mortality of a series of 416 cases was 15, or 3.6 per cent. The causes of death were: pneumonia, 6; pulmonary embolism, 2; hemorrhage and shock, 4; sepsis, 3.

The authors note that a certain number

of successful cases suffer from swelling of the arm, and that therefore this symptom is not invariably a symptom of recurrence. In Greenough, Simmons and Barney's cases adherence of the tumor to the skin was present in 262 cases, with 16 per cent of successes. This symptom was absent in 71 cases, with 32 per cent of freedom from recurrence. Hence the chances for relief appear to be twice as good when the skin is not adherent to the tumor. He draws the same conclusions in regard to adherence to the chest wall and the enlargement of axillary glands. Palpable enlargement of the glands above the clavicle occurred in 40 cases, of which only two have survived. In these two the glands were removed, and on microscopic examination were found not to be cancerous. No cases were free from recurrence in which palpably enlarged glands of the neck were detected. Involvement of both breasts was invariably fatal. Ulceration of the tumor was of bad prognostic omen, and as a result of microscopic study the percentage of recoveries was the smallest in medullary cancer and greatest in colloid. Adenocarcinoma was also relatively benign. Of 160 complete operations, by which is meant removal of the whole breast, axillary contents, sternal portion of the pectoralis major, and division or removal of the pectoralis minor, 16 per cent were successful in preventing recurrence of the disease. Semicomplete operations were performed in 75 instances, by which the authors mean a modification of the latter in the direction of the pectoralis minor which was left undisturbed; 25.3 per cent of these cases remained free from a recurrence. There were 85 incomplete operations, with a percentage of 25.9 per cent remaining free from recurrence. The reason for this apparently paradoxical showing is based on the fact that earlier and less extensive cases are subjected to incomplete operations. Palliative operations without hope of cure were performed in 56 cases, and in all instances cancerous tissue was supposed to have been left in the wound. Four of these 56 cases remained free from recurrence of the disease. The operative mortality of these pal-

liative cases (7 per cent) is higher than that for the most complete and extensive dissections. There were 126 cases in which it is known that recurrence occurred in the scar, and 138 in which it is known that none occurred. There were four authentic cases of late recurrence; two had local recurrence in the scar which did not appear until eight years and five months, respectively; after operation. One was free from all sign of recurrence for seven years, and then developed metastasis in the spine; and another, well for six years and nine months, developed evidence of recurrence in the abdomen.

These authors give the following summary:

Out of 416 cases of primary operations for cancer of the breast at the Massachusetts General Hospital from 1894 to 1903, inclusive, 376 were traced to a conclusive end result at an average period of eight years after operation.

Sixty-four cases were alive and well and seven died without recurrence over three years after the operation.

Counting in the operative mortality, there were 320 attempts at radical cure, 67 of which, or 20.9 per cent, were successful.

During this same period palliative operations were performed on 56 patients (15 per cent), and 52 cases were discharged untreated.

Cases in which the tumor was ulcerated, or was adherent to the skin or to the chest wall, and cases in which the axillary glands were palpably enlarged, gave notably less promising results than when these conditions did not exist.

No case with palpably enlarged cancerous glands above the clavicle, and no case of cancer of both breasts, was cured.

Medullary carcinoma was more grave than that of the scirrhus type, and adenocarcinoma and colloid were relatively of a far less malignant type.

The duration of the disease, other than in the individual case, exerted little influence on prognosis.

Extensive operations with wide removal of skin gave the greatest freedom from local recurrence. Removal of the pectoralis

minor appeared to be of slight significance. Incomplete operations on early cases yielded better results than extensive operations on cases which were well advanced.

Recurrence in the scar occurred in less than one-half of the cases. Internal metastasis was most frequent in the lungs, mediastinum, in the axillary and the supraclavicular glands, the liver, and the spine.

Seventeen out of 88 cases, or 19 per cent of those passing the three-year limit without evidence of recurrence, showed recurrence later, and four cases developed recurrence six years or more after the operation.

Ochsner gives the final results in 164 cases of carcinoma of the breast operated on at the Augustana Hospital. Of this number but 52 are still living without recurrence; 25 of these are within the three-year limit. He advocates the use of the *x*-ray treatment systematically after all operations.

Oliver as a result of his experience states that 14 of his 35 cases were beyond possibility of cure through operation, but if these be subtracted and the mortality be estimated from the remaining cases in which there was a reasonable hope of success, there remain 21 patients, 12 of whom recovered — a percentage of recovery of about 57.6.

Cabot contributes a study of the pathological conditions of carcinoma of the breast and their relation to the question of recurrence, from which he concludes that the question of recurrence depends more on the character of the growth and the degree of involvement of the lymphatic system than upon the thoroughness of removal. If the disease has affected many lymphatic glands it is sure to recur even after the removal of the axillary glands and contents. In the nine cases he had to study which did not show a recurrence, the lymphatic involvement was slight in all. In seven out of these nine cases the muscles were not removed. He holds that these facts, whilst giving us a basis for a somewhat greater accuracy in prognosis, should not be used as arguments against extensive radical operations, since the chance of getting ahead of the disease is improved when the efferent

lymphatics have been removed to as great a distance as possible.

In one case the nodule in the breast was small and so situated in the center of the gland that Cabot felt safe in leaving the pectoral muscles. The recurrence occurred in the muscle, thus mistakenly spared, and since that experience he has removed the muscle in all cases.

He calls attention to the danger of recurrence from the self-inoculation of the wound with cancer cells set free during operation, and hence urges that the dissection should be kept outside of the lymphatic distribution as far as possible. When the cancer has been cut into for diagnostic purposes the opening should be tightly closed before further operation is undertaken, and every precaution should be taken by changing instruments, etc., to avoid inoculation. Moreover, irrigation may be used on such occasions as an additional safeguard, and in cases in which the operation has gone close to the cancer or through suspicious tissues tincture of iodine is applied to the surface of the wound after the manner more commonly employed in the presence of tuberculosis; and this procedure has seemed to him to prevent a quick recurrence when such appeared otherwise inevitable. He instances cases showing the excellent local effect of the *x*-ray treatment after operation with recurrence.

Pilcher dwells upon the importance of opening the base of the neck as well as the axilla as a part of a routine procedure in removal of breast carcinoma. The key to the whole situation, he holds, is the triangle at the junction of the subclavian and internal jugular veins, where rest the node or nodes to which run not only the lymphatics which pass under the clavicle from the axilla, but also an inconstant but not infrequent set of ducts which run up on the front of the thorax from the mammary region to the base of the neck, down into which they dip after running over the inner end of the clavicle.

When the neck is opened this jugulosubclavian triangle is first to be exposed, explored, and cleaned, and from it, outward,

the lymphatic-bearing tissue can be best systematically dissected out.

Because of their deep situation and adequate protection by fibrous tissues infected nodes are difficult to detect by palpation until they have attained quite a size. When such nodes become distinctly palpable or visible, the presumption is that the infection is of long standing and cancerous infection has passed beyond them.

Ransohoff observes that to ascribe the improved results in operation for cancer of the breast altogether to operation is fallacious. He has collected 37 cases developing seven years or more after operation. Of these 26 were purely local recurrences and 11 were doubtful.

OPERATION FOR REMOVAL OF ENTIRE RECTUM AND NEIGHBORING PARTS IN CARCINOMA.

MUMMERY (*British Medical Journal*, No. 2422, 1907) notes that sepsis of the wound is responsible for nearly 80 per cent of the mortality; therefore the great object to be aimed at is aseptic healing. Nor can any operation in which fecal contamination is not avoided be considered perfect; therefore he advises colostomy, which should be performed a week or more previous to operation.

When there is no serious narrowing of the bowel lumen by the growth and it is possible by suitable methods to empty the bowel so that no fecal matter will find its way to the area of operation for some days after operation, preliminary colotomy is unnecessary.

At the time the colotomy is performed opportunity is afforded of examining the growth from above and of ascertaining whether there is any secondary gland enlargement, and if so, to what extent. The length of the sigmoid mesentery can also be determined. The portion of the sigmoid chosen for colotomy should be as far away from the rectum as possible. The bowels are well emptied by castor oil at least three days before the operation. After the castor oil salts should be administered to further

wash out the bowel, and then until the operation two or three days later no aperient should be given. The bowels should be washed out daily with soap-and-water enemata. A diet should be given which, while it insures as much nutritive effect as possible, will leave little or no residue after digestion. The day after operation the bowels should be washed out with an enema, to which some sodium bicarbonate may with advantage be added. A dose of tincture of opium or an injection of morphine is given four or five hours before operation, and a hypodermic of morphine just before commencing the operation. Incidentally it prevents the development of shock during the operation, allays the patient's fears, and renders the anesthesia smoother and easier. Ether anesthesia should be maintained throughout.

The operation is as follows: With the patient in the lithotomy position a small, hard cushion is so placed under the sacrum as to raise the buttocks well above the table; this makes the wound accessible and prevents intestinal prolapse. A good forehead lamp is a great help during the operation.

The surgeon, wearing rubber gloves, dissects up a cuff of mucous membrane from the anal canal for about two inches as in Whitehead's operation (scissors are employed for this and are then put aside and not again used). The rectum is then closed by a clamp and the portion of mucous membrane below the clamp sterilized with pure carbolic, or with a purse-string suture. Mummery prefers the former method, as it enables one to pull on the rectum if necessary.

The operation area is then cleansed, the rubber gloves being discarded. An incision is made through the sphincters posteriorly, and carried backward to a little beyond the base of the coccyx, which is removed. The posterior rectal space is then opened up, and the rectum and all the glands, cellular tissue, and lymphatics peeled off the sacrum in one piece.

The levator ani on each side is pulled down by passing a finger behind the muscle

and dividing it close to the rectum. The rectum in front is separated from the prostate and urethra, or in the female from the vagina. This is difficult and may readily involve the rectum, urethra, or vagina.

As soon as the peritoneal cul-de-sac is reached it is opened and the attachments of the peritoneum to the rectum divided, first on one side and then on the other, care being taken to keep as close to the rectum as possible, so as to avoid injury to the ureters. The rectum thus freed in front and at the sides, except for some fascial attachments which are easily divided, will come down several inches, being only attached by the mesorectum. This is clamped as near as possible to the sacrum, and divided in front of the clamp. This brings the sigmoid into view. The mesosigmoid is divided until a portion of the gut is reached which has a sufficiently long mesentery to extend to the anus easily and without dragging. This may be anywhere from three to six inches above the junction of the sigmoid with the rectum. The deeply placed clamps are difficult to tie off. This accomplished, the peritoneal floor of the pelvis is restored by stitching the peritoneum all around to the sides and front of the sigmoid. Some sterilized gauze is next placed in the wound to further protect the peritoneum, and its end brought out at the posterior part of the wound. The rest of the wound is sewn up completely and the sphincters carefully brought together and sutured. The whole of the wound and portion of sigmoid nearest to it is smeared with sterilized iodoform ointment. This seals up all the lymphatics and forms a complete protection to the wound from infection, while at the same time it does not prevent any blood or serum from finding its way out. The bowel is now cut through about three-quarters of an inch from the sphincters and the edges roughly stitched to the skin all round half an inch or more from the skin edge.

The object of this is to separate the junction of the skin edge and the peritoneum covering the bowel from the septic edge of the mucous membrane. A week after the

operation the extra mucous membrane is cut away with scissors. This is quite painless, and requires no anesthetic.

It is important, in choosing the point at which the bowel is to be divided, to see that the mesentery or mesosigmoid comes quite to the point of division, and is not on the stretch, otherwise there will be sloughing.

A short piece of rubber tube is placed in the bowel opening; gauze is packed round this, and the whole area of the wound is covered in with gauze; lastly, a large triangular sterilized pad is placed over the sacrum and perineum. To the base of this pad tapes are attached which go round the waist, and in front the apex of the pad is brought between the legs and attached to the waist straps. The rubber tube in the bowel is brought through the pad.

This operation is suitable for any growth of the rectum, except that in a few situated very high up at the junction with the sigmoid it may be necessary to open the abdomen first and separate the growth and divide the mesentery from above, the abdominal wound being then closed, and the operation completed as has been described. There are two conditions, however, which require some modification of this procedure. If the sphincters are involved and it is necessary to remove them, a preliminary colotomy should be performed, and later, when the excision is done, after removal of the rectum and growth, the end of the sigmoid is closed up and replaced in the pelvis, the perineum being completely stitched up and no opening left. If there is no portion of the mesentery of the sigmoid long enough to reach the anus, the whole of the bowel and rectum are pushed back into the pelvis, and the perineal wound is sewn up. The usual colotomy incision is then made in the abdomen, the rectum found and pulled out through it, and after cutting through the bowel a Paul's tube is tied into the proximal end and attached to the edges of the wound, so as to form a permanent artificial anus.

If time will allow of it a valvular opening may be made by pulling the proximal end of the bowel through between the muscles

in the abdominal wall, and out through a small opening in the skin some two inches from the first opening, which can then be closed, and the operation completed as has been described.

The patient should be nursed on the side for the first forty-eight hours if possible, and the dressings should be changed daily, as they are very liable to get displaced and soiled.

The patient should sit up as soon as possible; this is best managed by having a bed-rest at the back and a good hard cushion or bolster under the thighs to take the weight off the buttocks. This is particularly important in old people. In women regular catheterization for three or four days after operation is advisable.

The gauze can be removed on the third or fourth day. The bowels are best kept confined by morphine for five or six days, and then opened by castor oil by the mouth and oil enemata. If the wound heals aseptically the patient may be got up at the end of a fortnight, or in some cases even earlier. After the first week the bowels are kept acting daily by an enema first thing in the morning. This is much better than the use of aperients, and should be continued until a regular action of the bowels can be secured without it.

OPERATION IN TWO STAGES FOR RELIEF OF ILEUS OF THE JEJUNUM.

ROBINSON (*Annals of Surgery*, August, 1907) records the case of a twenty-eight-year-old mechanic, who after a hearty meal was seized with severe pain in the bowel, relieved by a cathartic. The pain recurred the following night. It subsided toward morning, leaving a dull, constant ache, general at first throughout the abdomen, but later localized to a point to the left and just below the umbilicus. The bowels could not be moved by cathartics or enemas. Great rigidity existed, but no tympany. No tumor mass could be felt. The abdomen was rather scaphoid.

This condition lasted twenty-four hours, when vomiting began, of stomach and

bowel contents first, then of bright-red blood and clots. This changed rapidly to "coffee-ground" vomit, with much mucus and occasional clots. There was hiccough, temperature 97°, pulse 112, rigidity, and local tenderness increased, the point of greatest tenderness being three inches above and just to the left of the umbilicus. Enemas contained mucus and blood clots, but almost no fecal matter.

When brought to the hospital the patient's temperature was 102° and pulse 140, and the abdomen slightly tympanitic. On section a congested and moderately tympanitic gut was found, which was systematically gone over. It was difficult to deliver the jejunum near the duodenum, but as it was brought into the wound an area of 10 to 12 inches long was encountered about three feet from the duodenum, congested, and covered in places with flakes of lymph. There were petechiæ on the surface of the gut, the streaks of lymph arranged in parallels at right angles to the long axis of the bowel, and the mesenteric vessels were in places thrombosed. This diseased gut was anchored in the left iliac fossa for the purpose of forming a fecal fistula as soon as adhesions should form. The patient reacted well from operation. Twenty-four hours later, however, he became very restless. His temperature rose to 102°; pulse 136; the abdomen was tympanitic, and all the signs of an extending peritonitis developed. The bowel was therefore opened, and from it were discharged great quantities of blood and grumous material with liquid fecal matter. His symptoms almost at once subsided, and his improvement was rapid, but on the seventh day it was noticed that he was rapidly losing weight, the abdominal skin was greatly irritated by the acrid discharges from the wound, and his discomfort was great. So high up had the bowel been opened that food taken by the mouth was often found only partially digested in the wound a short time after eating.

The second operation demonstrated dense adhesions by which the whole mass of intestines were matted together firmly. In free-

ing the gut the jejunum was so torn that five inches of it was resected, the ends being brought together by Lembert-Czerny sutures. A small gauze drain was inserted in the wound and the abdomen partially closed. Recovery was uneventful, except for a slight leakage at the line of suture.

Robinson believes this case to have been one of intussusception reduced by his manipulation at the first operation, though the symptoms closely respond to mesenteric embolus. There was, however, no coexisting heart disease nor evidence of acute embolism, the thrombosis being local and apparently the result of some mechanical obstruction from without, rather than disease or an occluding process within the lumen of the vessels.

A diagnosis of intussusception or retroperitoneal hernia on these symptoms alone would, however, be impossible in many cases in which the presence of a tumor mass was absent. He advocates, when there is profound systemic disturbance, the preliminary formation of a fistula, and the subsequent restoration of continuity of the gut by enterorrhaphy.

**RETROVERSION AND ITS TREATMENT:
AN ANALYSIS OF FIVE HUNDRED
CONSECUTIVE CASES AT THE
FREE HOSPITAL FOR
WOMEN.**

GRAVES (*Boston Medical and Surgical Journal*, July 4, 1907) holds that the powerful attachment of the vagina to the rami of the pubis is the most important of all the structures to the pelvic floor. A gradual weakening of the round ligaments may result in a retroversion; the gradual weakening of the uterosacral ligaments will result in retroversion and partial prolapse; and the gradual weakening of the utero-vesical ligaments will result in cystocele and partial prolapse; but when the vaginal attachment to the pubes gives way, everything falls and procidentia results.

In accordance with all writers on the subject he holds that pregnancy and childbirth constitute the most common causes of retroversion. The second most common cause is

pelvic inflammation with the formation of adhesions. Retroversion of this kind constitutes 20 per cent of the series of cases.

The third most common cause he terms developmental. Graves carefully excludes from this developmental class of cases all adhesions, pointing out that there is no more reason for the uterus to become adherent while lying in contact with the peritoneal surface covering the upper portion of the rectum than while in contact with the peritoneal surface covering the upper portion of the bladder. Some cases of retroversion occur during the period when the uterus is developing as a result of habitual constipation, or keeping the bladder distended. Such uteri might present no evidence of developmental defect other than a weakening of the ligaments.

The fourth most common cause of retroversion is the displacement due to pressure of pelvic tumors. There remain four per cent of cases for which he has been unable to make a satisfactory classification. These cases were most of them married or sterile women between the ages of thirty and forty, who had non-adherent retroversion, whose symptoms dated back only for a few years. He considers that they were either developmental, with absent symptoms, or they could be included among those individuals whom Tuffier has aptly described as possessing an inferiority of tissues.

Retroversion in these cases must be considered as a gradual process similar to floating kidneys or other visceral ptosis. The symptom-complex of a typical case is highly characteristic. The woman suffers from constant sacral backache, ovarian pain, dysmenorrhea, or profuse menstruation, and is nervous and constipated and has frequent headaches. The sacral backache is the most constant and characteristic of these symptoms, occurring in 76 per cent of all these cases, and is the symptom which usually brings the patient to the physician.

The second most common symptom is ovarian pain on one or both sides, more frequently on the left side, and occurring in 62 per cent of the cases. The ovarian pain is probably due to a circulatory disturbance

from malposition of the uterus and some ovarian prolapse. The ovary is usually edematous and larger and heavier than normal.

Disturbance of menstruation occurs in 56 per cent of cases, and is especially frequent and marked in those in whom the retrodisplacement is developmental. It is then dysmenorrheic in type, whilst in women who have suffered from the after-results of childbirth it usually appears in the form of profuse menstruation, the result of the gland hypertrophy of the endometrium.

Constipation is a pronounced symptom in 51 per cent of all the cases. Headache and nervousness are both frequently complained of. In inflammatory cases the most characteristic symptom was ovarian pain; in developmental cases dysmenorrhea.

Two hundred and sixty-three patients subjected to operation answered letters sent to them in regard to relief of symptoms: 86 per cent stated they were either completely cured or much relieved; 70 per cent of those having ovarian pain were either cured or relieved; and 48 per cent were cured of constipation.

Graves states that with these figures in view, and in consideration of the fact that the great majority of retroversion cases are complicated by other surgical diseases, any argument as to the comparative merits of treatment by pessaries or tampons is practically out of the question excepting in a few selected cases. In this series of cases two died, one six hours after operation from heart embolism, the other from general peritonitis caused by the staphylococcus albus. Many of these cases were complicated by serious and dangerous pelvic conditions.

From a careful study of operative cases in general Graves concludes that about 12 per cent of cases recur.

Alexander's operation was performed 191 times, with a known recurrence of 13 per cent. Ventrosuspension and ventrofixation were performed 267 times, with a known recurrence of 9 per cent. Internal shortening of the round ligaments was performed

35 times, with a known recurrence of 31 per cent.

By Alexander's operation the uterus is suspended from the abdominal wall from its two weakest points, and in developmental cases there may be great difficulty in finding the round ligaments; none the less the results in suitable cases are excellent. Of the cases of ventrosuspension and ventrofixation, two-thirds of the recurrences were attributable to the method of passing the suture only through the peritoneum. Where the uterus has been effectively attached to the abdominal wall symptomatic results and results in pregnancy in the series of cases reported by Graves have been excellent.

In most cases besides the backward displacement of the uterus there is some sagging of the main supports. This is less frequent in cases due to adhesions, sometimes entirely absent in cases due to tumors. The effect of treatment is to overcome the sagging of the diaphragmatic support. This may be done by supporting the diaphragm from below, as is accomplished to a certain extent by pessaries, by a complicated operation which will restore each essential structure of the diaphragmatic support to its proper function, or by suspending the uterus from above. The only practicable method is by support from above. The only available point of permanent support is the anterior abdominal wall, and experience has shown that this is an admirable support to the pelvic organs. Graves states that in cases in which the uterus can be readily replaced and will remain in position, and in which there is no necessity of inspecting the abdominal cavity, Alexander's operation may be recommended. Where it is desirable to open the abdomen, and where there are no excessive adhesions and no marked relaxation of the diaphragmatic support, Mayo's internal Alexander is the operation of choice. In case of many adhesions and marked retroflexion, or with much sagging of the diaphragmatic support, the uterus should be attached to the abdominal wall in a manner so that it will stay, the exact method of attachment being a matter of

choice with the individual surgeon, the question of future childbirths never being disregarded. Attachment to the abdominal wall by a suture merely through the peritoneum is an inefficient method of ventral suspension. Intra-abdominal shortening of the round ligaments is an inefficient treatment for retroversion.

The technique of the Mayo operation, which is a modification of Gilliam's operation, is given as follows:

A median incision is made; the round ligament of the right side is then grasped by a pair of curved clamps at the junction of the middle and outer third. The assistant holding this clamp draws the ligament toward the median line, pulling the peritoneum at the point where the round ligament enters the abdominal wall into the form of a funnel. A pair of curved clamps with narrow blades is then inserted between the fascia and rectus muscle of the right side and pushed directly to the internal ring and down into the funnel of peritoneum, formed by the traction of the round ligament. It is then pushed along the course of the round ligament still underneath the peritoneum and made to grasp the ligament at the point where the other clamp holds it. The ligament is then drawn up through the internal ring and out to the median line under the fascia, the clamp at no time entering the peritoneal cavity. This procedure is then carried out on the left side, and after the peritoneal wound is closed in the median line the two ligaments are drawn together over the rectus muscles and united by several interrupted sutures.

The operation is a simple one to perform; it has been done many times at the Free Hospital for Women, and the results so far have been universally excellent.

FRACTURE OF THE TUBEROSITY OF THE TIBIA.

JENSEN (*Archiv für klinische Chirurgie*, Bd. lxxxiii, H. 1) on the basis of 50 cases, 40 of which were collected from literature, has made a study of this subject. He believes that the tuberosity has its own center of development, that it unites with the

diaphysis anywhere between the fourteenth and twenty-first year, the ossification rarely beginning before the fourteenth year. The union with the upper epiphysis of the tibia comes earlier. These fractures are found in boys and young men who lead an active life, usually those who indulge in competitive sports. Jensen has but a single girl in his collection. It is practically always due to muscular force. As contrasted with patellar fracture, which occurs from the twentieth to the fortieth year, it is noted from the twelfth to the twentieth year. Partial fracture exhibits either several small fragments or a single large fragment held in place by periosteum, or a portion of the bone not broken through, or thick overlying fascia. Diagnosis of partial fracture is rarely made except by the x-ray. The right leg is more commonly involved than the left. The thirteenth year is the one of predilection. At times the onset is characterized by sudden more or less severe pain, quickly forgotten, but recurring apparently without cause. There is but partial disability, exhibited only on forced flexion or violent movement. The persistence and recurrence of pain and limping finally force the patient to seek help. The characteristic signs are swelling and tenderness of the tuberosity. This swelling is bony, sometimes shows slight mobility. At times the immediate pain is severe, unusually pronounced, and there is marked swelling not only at the point of break but an intra-articular effusion. This condition has often been mistaken for growing pains, periostitis, epiphysitis, or bursitis. Jensen calls attention to the fact that it is not an infrequent injury of foot-ball players, and indeed he believes that the so-called periostitis of the tibial tuberosity described among such youth is usually an undetected fracture.

A complete fracture may involve the tuberosity alone or a considerable portion of the head of the tibia. The fragment is usually displaced upward and is palpable. At the moment of the injury there is violent pain, strictly localized; at times a crack is heard, usually the sensation of something having given way. The power of extension

is lost, swelling is rapid, and if the fracture be intercapsular there will be an almost immediate effusion into the joint. The patella is usually projected forward and unduly mobile. The tuberosity is found abnormally placed and extremely tender. These symptoms are perfectly obvious immediately after injury, but after inflammatory swelling has occurred in the course of two or three days may be extremely difficult to elicit.

As to treatment the author believes after partial fracture that this should be ambulant after the immediate swelling due to blood effusion and inflammatory reaction has subsided. The treatment until this end is accomplished lies in putting the patient to bed and applying a straight posterior splint and an ice-cap over the seat of injury, followed in a few days by massage. The patient is allowed to walk and move about early, within two weeks, but is cautioned against any violent movements until the tuberosity has entirely lost its tenderness. If the patient is not seen for some time after injury, which is a common occurrence, he is treated by massage and is forbidden all sports until the joint is entirely painless. At times the joint remains weak for several years.

When the fragment, together with a porvise against operation until the swelling has subsided. During this time he elevates the part, applies either ice-bags or poultices, and tries to bring the fragment in place by means of straps. If this is not successful operation is indicated, although it should be remembered that very good function can be obtained even if the tuberosity finally grows into position a little higher than it normally belongs.

When the fragment, together with a portion of the head of the tibia, has been driven into the joint, so that it interferes with the movement of the latter, operation is absolutely indicated.

A U-shaped incision is made, its lower part in the position of the tuberosity; the joint is opened, emptied of the blood, and closed; the tuberosity is brought in place and held there either by ivory pegs or suture of aluminum, bronze, silk, or catgut. A

splint is worn for ten to fourteen days. Thereafter the hip muscles are massaged and slight passive movement at the knee is begun. In four to five weeks the patient is allowed to leave his bed, discarding his splint and using crutches.

THE TREATMENT OF RENAL AND VESICAL CONDITIONS BY PERMANENT DRAINAGE THROUGH THE LOIN.

WATSON (*Annals of Surgery*, vol. xlv, No. 3) believes that the use of a device which would efficiently drain the kidneys and yet keep the patient dry in cases of long-continued or permanent renal fistula would greatly extend the field of treatment in certain renal and vesical conditions. Having constructed such a device he proposes the simultaneous performance of bilateral nephrostomy, tying off both ureters at the same time, and the establishing of permanent renal fistulæ, thus diverting all urine from the bladder, in cases of inoperable vesical tumor, and in vesical tuberculosis originating in descending infection in which both kidneys are involved in the tuberculous process, and when tuberculous lesions of the bladder are causing suffering; also as a step preliminary to the total extirpation of the bladder in certain cases of vesical tumor.

The contrivance for handling the urine designed by the writer keeps the patient perfectly dry and can be worn without attracting attention and with entire comfort. It is composed of a hard-rubber, cup-shaped shield through which the tube which enters and drains the kidney is passed; a light metal receptacle into which the urine is conveyed; a rubber tube attached to the receptacle, by means of which the latter is emptied; and two elastic bands or belts one inch in width which pass around the body and by which the shield and the receptacle are held in place. At night the receptacle is detached, and long tubes are substituted for the ones which drain the shield and the kidney. Two tubes lead to a bottle which is fastened to the side of the bed, and the drainage is received by that during the night.

REVIEWS.

A SYSTEM OF MEDICINE. By Many Writers. Edited by Thomas Clifford Allbutt, M.D., and Humphry Davy Rolleston, M.D. Macmillan & Co., New York and London, 1905, 1906, and 1907.

Many of our readers are probably familiar with the first edition of this standard System of Medicine, which first appeared a number of years ago, and which has been universally received by medical men as a complete and adequate summarization of our present knowledge of pathology and practice. The first volume of the new edition deals with revised articles upon the history of medicine, medical statistics, anthropology and medicine, the study of old age, dietetics, and the principles of drug therapeutics. The latter article, which was written by the late Dr. Leech, has been revised by Sir Lauder Brunton. The article on Climate has been written by that standard authority, Sir Hermann Weber, and Dr. M. G. Foster, and that upon Hydrotherapy by Sir Hermann Weber and Dr. F. Parks Weber. There are also chapters upon the medical application of electricity, on the use of the x -rays, and still another upon the clinical examination of the blood and its significance, followed by an exhaustive chapter upon Inflammation by Professor Adami. The closing pages of Volume I are devoted to the various infectious fevers.

Volume II, Part I, continues with the discussion of the general pathology of infectious fevers and a number of the infections not always accompanied by fever, as, for example, glanders and anthrax. Under chronic infections we find exhaustive articles upon tuberculosis and syphilis. Under the head of infectious diseases of doubtful nature we find both forms of measles, scarlet fever, chicken-pox, smallpox, typhus, whooping-cough and mumps, glandular fever and rheumatic fever. Rheumatism and smallpox might, we think, have been classed amongst those fevers associated with infection by a definite microörganism. It seems to us, too, that it is rather an arti-

ficial classification which places "foot-and-mouth disease" and hydrophobia in a different class from anthrax and glanders. The volume closes with discussions of the various intoxications, such as food poisoning, grain poisoning, alcoholism, opium and other toxicants, and finally with one upon the effects of metallic and other poisons, including poisonous trades, by Dr. Oliver.

Part II of Volume II deals with protozoa, mosquitoes, blood-sucking insects, and flies and ticks, and then with the various so-called tropical diseases, such as trypanosomiasis and sleeping sickness. Under this heading we also find malaria and black-water and tick fever, although surely malaria can scarcely be considered, strictly speaking, a tropical disease. It seems very odd, too, to have the "Spotted Fever of the Rocky Mountains" classed with tropical diseases. Dysentery is also found in this class, as is leprosy, sunstroke, and snake-bite. It is only fair to say, however, that the articles are better than the classification; indeed, they are excellent, and in each instance are written by authorities who are universally recognized. This volume closes with articles upon worms and hydatid disease.

The third volume, which has just appeared, at the close of 1907, opens with a discussion of a number of diseases of so-called obscure origin, such as rheumatoid arthritis, spondylitis deformans, and the various articular lesions of infectious diseases. In this same class we find articles dealing with rickets, gout, diabetes mellitus, seasickness, and mountain-sickness. The volume then proceeds to a consideration of diseases of the alimentary canal. The opening article in this section, by Professor J. Rose-Bradford upon the Physiology and Pathology of Secretion, is followed by one by Fenwick upon the General Physiology and Pathology of Digestion, and then ensue articles upon diseases of the mouth, and of the rest of the alimentary canal all the way

through to the anus. The important subject of constipation is treated by Sir Lauder Brunton, and that upon tumors of the stomach by Dr. W. Hale-White, while Mr. Mummery has revised the article of Mr. Allingham upon the Diagnosis of Diseases of the Anus and Rectum. Here, again, we find another most unusual classification, for "Shock" is the first condition described under the diseases of the peritoneum, a consideration of which diseases closes Volume III, which is the last of this notable series so far issued.

The price per volume is \$5.00 in cloth.

A TEXT-BOOK OF DISEASES OF THE NOSE AND THROAT. By D. Braden Kyle, A.M., M.D. Fourth Edition, Thoroughly Revised and Enlarged. Copiously Illustrated. The W. B. Saunders Co., Philadelphia and London, 1907.

The original object of the writer in preparing this book was to present physicians and students with an adequate summary of our knowledge concerning diseases of the nose and throat in as concise a manner as was consistent with clearness. No sooner had the book appeared than it was evident that the author had been successful in his effort, and the appearance of this, the fourth edition, eight years after the first appeared is an indication of the fact that the volume has been thoroughly appreciated. The book is characterized by an evident thorough familiarity of the author with the etiology and pathology of the conditions which he discusses, and added to this we find constant evidence of the fact that he is an able and skilful practitioner of large experience. In other words, the book presents the happy combination of scientific discussion with practical application of the results of scientific knowledge to the treatment of the maladies with which it deals. Far too often the practical man is prone to ignore the scientific side of his subject, or he who is interested in the scientific side fails to appreciate the needs of his fellow practitioners, but this is not the case in the volume before us.

Not only has the present volume been thoroughly revised, but a host of new articles have been added, and much additional information has been given in regard

to a subject which the author has practically made his own, namely, the analysis of the salivary secretion and its significance in diagnosis; a part of clinical medicine which has not received the attention which it deserves. We can cordially recommend this book as one of the best, if not the best, which can be placed in the hands of the specialist, the general practitioner, or the student.

ATLAS AND TEXT-BOOK OF HUMAN ANATOMY. By Johannes Sobotta. Edited with Additions by J. Playfair McMurrich, A.M., Ph.D. Third Volume. W. B. Saunders Co., Philadelphia and London, 1907.

This, the third, volume of Sobotta's Atlas and Text-book completes the work to which we referred in terms of high praise on the appearance of the first and second volumes, a number of months ago. The present volume is somewhat larger than its predecessors and maintains the high standard set by them. It is well printed in large type, and the plates, both in black and white and in colors, are most excellent. We do not know of any book of this character which can be more cordially recommended to the student, although we presume that the best results will be obtained if he uses it in connection with one of the regular text-books and in connection with his active work in dissection. Certainly for the purpose of refreshing the mind for examination no better means can be taken, since it possesses none of the disadvantages of the condensed manuals of anatomy, and its excellent illustrations are as clear as actual dissections. The present volume deals with the anatomy of the vascular system, lymphatic system, nervous system, and organs of special sense, and also deals largely with abdominal and thoracic anatomy in its discussion of the vascular system.

THE SEXUAL INSTINCT: ITS USES AND DANGERS AS AFFECTING HEREDITY AND MORALS. By James Foster Scott, M.D. Second Edition, Revised and Enlarged. E. B. Treat & Co., New York, 1908. Price \$2.00.

There can be no doubt whatever that a need exists for some book which will competently deal with this important subject,

which is as interesting and important, but no more interesting and important, to-day as it was a thousand years ago. As yet, so far as we know, no author has successfully accomplished a task which is necessarily difficult. He has either manifested an unnecessary desire to record cases of sexual perversion, which serve to show the "rotteness" of certain persons in the moral sense, or he has dealt with the subject in a sentimental manner which deprives his presentation of it of the value of scientific proportion. Almost everything that is good in this book, and there is much that is good, could be placed in half the space, but like all other books of its character it sometimes wanders too far afield, and does not strictly adhere to the theme. Some of the sentences in the book are also somewhat confusing. Thus we find the following on page 32: "But even though a man remain unmarried he can do more good to his tribe or community by setting the example of a glorious life than can others who do not possess his sterling qualities by the begetting of progeny." Whether this sentence means that the unmarried man should beget progeny, or whether it means that those without sterling qualities should beget progeny, seems to be in doubt from its construction.

The real blemish on the book, however, is the fact that a consideration of religion, prostitution, and poetry is now and then combined. Thus, we are told that "our bodies are temples of the Holy Ghost," and then we are reminded of Tennyson's words:

My strength is as the strength of ten
Because my heart is pure.

On page 114 we find no less than six verses for which no credit, except quotation marks, is given. These are in the context with the description of the sufferings of the continent man. The first verse is as follows:

He who in pleasure's downy arms
Ne'er lost his health or youthful charms
A hero lives, and justly can
Exclaim: "In me behold a man."

Again, on the opposite page, we are told that "the silent music of the boy Cupid strikes its sweet notes everywhere."

Verbum sap.!

GREEN'S ENCYCLOPEDIA AND DICTIONARY OF MEDICINE AND SURGERY. Volume VI. Lumbar to Nephrotomy. William Green & Sons, Edinburgh and London, 1907.

Our readers are familiar with our views in regard to this excellent encyclopedia which has now been appearing during the last two years. The present volume maintains the high standard set by its predecessors. The articles while not exhaustive are adequate, and are contributed by men who are well known in the English medical profession as authorities in their respective lines. While not as bulky as one or two of the medical encyclopedias which have appeared in this country, it is nevertheless much wider in its scope and title than Quain's well-known dictionary of medicine, and as its name implies, covers the whole field of medical and surgical science.

A REFERENCE HANDBOOK OF OBSTETRIC NURSING. By W. Reynolds Wilson, M.D. W. B. Saunders Co., Philadelphia and London, 1907. Price \$1.75.

We have become so accustomed to have the term "Reference Handbook" applied to a volume which is mammoth in size that it is essential first of all to point out that this is truly a handbook about 6 inches long by 4 wide, containing about 250 pages and giving in detail the generally accepted facts, and the author's views, in regard to what shall be done in obstetric nursing. Dr. Wilson has been for many years an active practitioner of obstetrics both in hospital and private work, and any advice which he finds necessary for his nurses may well be taken and utilized by practitioners of medicine and nurses as well. The illustrations are naturally small and largely in outline, but they are clear, and really illustrate the points which they are designed to cover.

DISEASES OF CHILDREN. A Manual for Students and Practitioners. By George M. Tuttle, M.D. Second Edition, Revised and Enlarged. Illustrated. Lea Bros. & Co., Philadelphia and New York, 1907.

This small volume belongs to Lea's series of Pocket Text-books. It does not profess to be original, but to embody most of the generally accepted views in regard to the diagnosis and treatment of diseases of children, and as such a book it can be commended.

A MANUAL OF PRESCRIPTION WRITING. By Matthew D. Mann, A.M., M.D. Revised by Edward Cox Mann, A.M., M.D. Sixth Edition, Revised, Enlarged, and Corrected. G. P. Putnam's Sons, New York, 1907.

Few medical men who have graduated during the last thirty years are unfamiliar with "Mann's Prescription Writing," which throughout this whole period has been largely employed in medical schools by students taking their elementary courses, and perhaps too little employed by students who were about to graduate. The object of this little manual is to give a full explanation of the methods of correctly writing prescriptions. A table of doses expressed in both the apothecary and metric systems, and rules for avoiding incompatibilities and for combining medicines, are given. It is an excellent book, and we wish it was more commonly employed by young as well as older medical men.

HUMAN ANATOMY, INCLUDING STRUCTURE AND DEVELOPMENT AND PRACTICAL CONSIDERATIONS. Edited by Professor George A. Piersol, with the Collaboration of Professors Thomas Dwight, Carl A. Hamann, J. Playfair McMurich, J. William White, and John C. Heisler. J. B. Lippincott Company, Philadelphia, 1907.

In estimating the value of any scientific book, it is only fair, and should usually be thought absolutely necessary, to take into consideration the avowed purpose and the view-point of the author.

As expressed in the preface of this Anatomy, three chief considerations were in mind:

1. The presentation of the essential facts of Human Anatomy, regarded in its broadest sense, and including the structure and development, as well as the appearance and relations, of the various parts of the body.

2. Additional emphasis and explanation of such anatomic details as most directly relate to the conditions treated by the physician and surgeon.

3. The elucidation of the text by faithful and realistic illustrations taken from actual dissections or preparations. This plan makes it obvious that what was intended was the preparation of a book which would cover all phases of the subject, not only old-fashioned descriptive anatomy, but also de-

velopmental and structural anatomy, as well as those matters which are included under the appropriate title of "Practical Considerations," and which will be dealt with later.

Let us see how far these aims have been realized.

After brief but suggestive general discussions as to Terminology, etc., the elements of structure—the cells—are described, including a clear account of mitotic division. Next, Early Development is taken up, so that the student may be acquainted with the manner in which the chief and fundamental parts of the body are laid down, with the intention of making the later discussion of the development of the various organs clearer and more easily understood. This section is full of interesting original pictures and diagrams, among which are those of human embryos, and diagrams in colors of the development of the fetal membranes. Some of these—as Figs. 49 and 50—are as artistic as they are instructive.

The section on the Skeleton, preceded by a clear and well-illustrated account of the structure and the development of bone, is a refreshing contrast to many articles on the same subject in older anatomies, as the illustrations are clear and crisp (the technique serving to represent the textural peculiarities of bones much better than would the smoother pictures of half-tones), and the text is concise. The author (Professor Dwight), an authority on the skeleton, has incorporated many observations gleaned from his personal investigations. A novel feature is the small figure showing the muscle attachments, which serves well the purpose of relieving the larger picture of multiplicity of obscuring details.

Joints are treated with the Bones, which is unusual, but which after all is where they logically belong. Ordinarily they are to be found only in a separate section. An excellent example of the greater simplicity of this method may be found in the treatment of the carpal joints, and this remark applies to both text and illustrations.

The muscles are considered on a morphological classification. This gives them a grouping which will be unfamiliar at first,

but which shows their true relation, and is undoubtedly to be preferred to the older arrangements. The text of this section is concise but quite sufficiently full. Special attention has been paid to variations and their morphological significance. The illustrations here are most attractive. They are in colors, are both realistic and artistic, and are in strong contrast to the usual diagrammatic figures found in text-books.

The Vascular System is very complete and thoroughly satisfactory. The article on the Heart is illustrated by some unusual views derived from formalin-hardened hearts.

Arteries are well described, and their variations and anomalies are fully treated from the developmental standpoint. We note unusually rich illustrations of the visceral branches of the abdominal aorta, and in the article on the veins, the portal system is particularly well shown. The description of the communication between the portal and systemic veins is worthy of special mention.

The Lymphatics—a section usually sadly slighted in text-books—are here systematically discussed, and are illustrated by an excellent series of pictures based for the most part on special papers by various workers, and gathered from recent journals or monographs.

The Nervous System is one of the best sections in the book. It opens with a consideration of the fundamental principles—supporting the neuron theory—and contains a very complete review of special nerve endings, a clear description of the spinal cord and brain, and a series of cross-sections of the brain stem, with sections carefully and accurately drawn from preparations of Professor Spiller.

We note two slips in the color block where (Figs. 1003 and 1040) the artist and the printer have evidently been at fault.

In the section on the Nerves, a novel feature is the full discussion of the deep nuclei in connection with cranial nerves, not separated by being taken up with the brain. This results in a much more connected account of the relations of the nerves than is

usual. This section is illustrated by a generous supply of original drawings from actual preparations—the first considerable and complete series of such pictures since Hirschfeld's Atlas in the 60's.

The description of the Sense Organs is unusually complete and contains also many original pictures. The sections of the Ear, showing the tympanic cavity and internal ear, and the careful drawings of the ear drum and of the normal eye-ground, are noteworthy.

The description of the Digestive Organs includes their gross relations, their structure and their development, and is illustrated by admirable pictures from formalin-hardened organs and from frozen sections, as well as by excellent microscopic pictures.

The article on the Respiratory Organs includes very instructive views of the relations of the lungs, pleura, and thoracic walls. We note that Miller's views of the ultimate lung structure are adopted.

The Accessory Organs of Nutrition are a provisional group, which includes the spleen, thyroid, thymus, suprarenals, and the anterior lobes of the pituitary body; the carotid and coccygeal bodies are also added as a matter of convenience. The views of these organs and of their structure are admirable.

The section on the Uro-genital System is very comprehensive.

The Kidney is adequately considered in all its relations.

There are many excellent pictures of details of the urinary organs. The section concludes with a clear account of the important developmental parts of the generative apparatus. The male perineum and the female perineum are each illustrated from a unique series of sections at increasingly deeper levels.

Among the general features to be commended is the completeness with which the subject is covered, the gross anatomy, structural anatomy, and developmental anatomy being considered together—a very desirable arrangement for the student, who by studying these phases of the subject at the same time avoids the common blunder of

regarding descriptive anatomy, histology, and embryology as distinct subjects instead of integral parts of one subject.

The sections devoted to the bearing of anatomical details upon the conditions treated by the physician and surgeon immediately follow the descriptive anatomy of each structure or part, and though constituting in printed pages but a small part of the book, present the subject of applied anatomy in logical sequence and with a broad conception of relative importance for which White's (J. William) experience as a clinician and teacher has singularly fitted him. There is thus accomplished a correlation of fundamental facts and their immediate bearing on diagnosis and treatment most serviceable to the practitioner, but particularly valuable to the student in that from the first his anatomy becomes not a mere act of memory but an essential part of his equipment in the proper understanding and appropriate treatment of injuries and diseases. For instance, following the sections devoted to structure, development, ligaments, and articulations of the vertebræ comes the heading "The Spine as a Whole." Immediately thereafter are found "Practical Considerations," under which heading are found a concise but clear description of normal variations of curvature and angulation with their associated deformities, sprains, fractures and luxations, with the mechanical reason for their seats, symptoms, and complications, and finally, an admirable subsection upon landmarks of the spine.

Throughout the book this system of correlation is admirably carried out. Nor is this part of the work likely to be of minor importance in attaining the success of which Piersol's book is assured.

Piersol's Anatomy follows the well-recognized scheme adopted by the great classical works—Quain in English, Henle, and now Bardeleben in German, and Poirier and Charpy in French. This is the ideal plan, and if it necessarily demands more space than the usual text-book affords, it is still the best investment for the thoughtful student and for the practitioner who desires a work of reference which responds to his

demands for a full rather than an incomplete description. The book is remarkably rich in all kinds of general anatomical information; so much indeed has never before been gathered into one single volume. The press work is excellent. The illustrations are not merely diagrams but show parts as they are, and in a way which, on account of their artistic quality, makes most of them very agreeable to look at and consult. An idea of the labor which has been expended on the work may be gathered from the fact that of the 1734 illustrations 1522 are original, while the others are not mere copies, but are genuine redrawings from special works.
E. M.

OPERATIONS OF GENERAL PRACTICE. By Edred M. Corner and H. Irving Pinches. London: Hodder & Stoughton, 1907.

This work fills a long-felt want, since a great deficiency in the modern medical education is its failure to teach the student manual dexterity in the simple procedures required alike of both the surgeon and the physician, such, for instance, as catheterization, dressing of wounds, giving hypodermic injections, and the many procedures which become second nature to the experienced surgeon or to the well-equipped hospital resident.

By its simple language, lucidity of description, and minute attention to detail it admirably accomplishes the authors' intention as set forth in their preface.

Dangers or difficulties are fully considered, together with the best means of avoiding them. Not all known means of treatment are discussed, but always one sound, practical procedure which the authors have found most serviceable is described, thus lessening the embarrassment to the inexperienced reader.

The illustrations elucidate the text. The instruments of choice, the most helpful postures of the patient, the exact sites for incisions, are admirably pictured.

At times the authors, doubtless because of their own great familiarity with surgical work, have underrated the difficulty of certain procedures. Nor does it seem need-

ful to describe in such a book amputation of the breast, nor radical cure of hernia.

The book can be heartily commended as sound in its teaching, clear in its exposition, and likely to be of great value to the young men about to begin their hospital work, or to older practitioners who have never had the opportunity for such work.

J. J. A. VAN K.

CANCER OF THE WOMB: ITS SYMPTOMS, DIAGNOSIS, PROGNOSIS, AND TREATMENT. By Frederick John McCann, M.D. (Edin.), F.R.C.S. (Eng.), M.R.C.P. (Lond.). Hodder & Stoughton, London, 1907.

One might easily find a more inviting field for observation and one more profitable for dissertation than that of cancer of the womb, with the meager knowledge which we have as yet acquired of this subject and the little that it offers in response to therapeutic efforts. It is, however, of the utmost importance that some one should now and then, as the author of this monograph has done, make an inventory of the knowledge that has accumulated upon cancer of the womb, and at the same time give to the profession what he has himself learned by a lengthy experience with this disease.

The parasitic theory of cancer is dismissed by the statement that the trend of modern opinion is against such a theory, and a quotation is given which supports this view. As to the part played by cervical lacerations in the production of cancer, a middle ground is taken. The classification of cancer according to locality and microscopic character of growth is adopted, and, while it may be open to some objection, is certainly very useful, especially from the point of view of diagnosis, and in accord with that of the best authorities. Case histories and very carefully executed plates made from photographs of specimens removed at operation are used to illustrate the various forms of cancer, and these serve their purpose most acceptably. Great emphasis is placed upon the necessity for early recognition of the signs and symptoms of cancer and an early diagnosis. It is pointed out that the usual description of cancer of the womb is that of the later stages, and

an extended discussion of early signs and symptoms and means of diagnosis is entered into. It is noted that at the beginning of the disease the patient often gains in weight, and that the majority of patients with cancer of the womb are well nourished, thus showing that emaciation comes late in the disease if at all, and that its appearance cannot be waited for in making a diagnosis.

Much attention is given to the manner of spread of cancer and its recurrence after operation. This latter is said to be due in part, perhaps, to inoculation of cancer cells upon the operation wound, but chiefly to incomplete removal. In speaking of the differential diagnosis the author states that the initial lesion of syphilis is not rare upon the cervix. This is, however, not in accord with the observation of many gynecologists. Any postclimacteric intra-uterine activity should be regarded with suspicion, and senile endometritis should always be treated by hysterectomy. A description of the various more or less dependable operations is given. The methods of preparation, operation, and after-treatment employed by the author are very clearly and minutely set forth, and everywhere is manifest a commendable degree of good judgment and tolerance for methods found serviceable in the hands of others of wide experience.

McCann believes that unless a complete removal of the diseased tissues can be promised it is not justifiable to advise patients to submit to a wide-spread operation extended to the glands, but says he is, however, a strong advocate of this method.

A very practical chapter is given on the treatment of inoperable cancer. No mention is made of the treatment of these cases by methylene blue as advocated by A. Jacobi several years ago.

Chapters are added in reference to sarcoma of the uterus and deciduoma malignum. The physical features of the book, though out of the ordinary, are rather pleasing and offer no departure that can be conscientiously condemned. The paper is well suited for a monograph, and is a welcome relief from the highly sized paper in common use in medical books.

J. J. R.

CORRESPONDENCE.

LONDON LETTER.

BY G. F. STILL, M.D., F.R.C.P.

Perhaps one of the most important events of the past month, although it has excited little commotion amongst the profession or the lay public, is the almost revolutionary measure which has just been approved by the Royal Colleges of Physicians and Surgeons in London—the admission of women to the qualifying examinations of the Conjoint Board of these colleges. About ten years ago a similar measure was rejected by a considerable majority; now after most other qualifying examinations are open to women, the Royal Colleges have decided to pursue the same course. It does not seem likely that this step will materially affect the position of medical women in this country, for they already have free access to high qualifications, and there is no likelihood that the particular diplomas which are granted by the two London colleges will either increase the entry of women into the already overstocked profession of medicine or improve the position of those already qualified.

The "brown dog" at Battersea continues to excite great searchings of heart amongst the students of University College, who consider themselves libeled by the statement upon this monument that the little brown dog was "done to death" in the laboratories of University College. The antivivisectionists must rejoice in the publicity which has thus been given to this contemptible erection, which could hardly have existed in any other part of London but Battersea, where socialism, radicalism, antivivisectionism, and much else that is objectionable seem to flourish, although there are already signs that that patient beast of burden, the Ratepayer, is beginning to object to the diversion of his money to such purposes as a radical borough council may select.

One of the most interesting papers of the month at the medical societies was one read by Dr. M. S. Paterson, who is medical su-

perintendent of the Sanatorium at Frimley in Surrey in connection with the Brompton Consumption Hospital. He advocated a system of graduated manual labor in the treatment of phthisis, and stated that the results had been very satisfactory. At first patients walked a certain distance, then carried a load of earth for the same distance or a longer, then began to shovel earth, then to do heavier shoveling, and eventually to use a pickaxe. After this a patient was allowed to practice his own trade for three weeks before being discharged from the Sanatorium. It was found that such employment kept the patients cheerful and contented, and provided the labor was not overdone it seemed to cause a definite improvement in the disease. If too much work was allowed—and there was generally a tendency in the patients to work too hard unless kept under supervision—the appetite failed, there was headache, the temperature would rise to 99° F., and there might be pains in his joints: such symptoms necessitated complete rest in bed for a short time. This mode of treatment was supposed to have a theoretical basis in the variations of the opsonic index caused by such labor. Physical exercise was shown by Dr. Inman to cause a rise in the opsonic index; there was in fact an autoinoculation produced by the muscular exertion, comparable to that induced by injection of tuberculin. This view was supported by the clinical facts that after such a rise of temperature as has been mentioned above the patients were often better than before, and that the improvement in some cases did not occur until a certain degree of muscular exertion had been reached. In the discussion on this paper emphasis was laid on the important point that the muscular exercise was carefully regulated in these cases: as Dr. Kingston Fowler said, phthisical patients were seldom the better for ordinary sports, because in these there was no regulation of the amount of muscular exertion.

The name of Miss Florence Nightingale

has long been famous in the annals of nursing; and the King has done a graceful act which will be approved by all his subjects in conferring upon this lady the Order of Merit, which is regarded as one of the highest honors of this country, and which has never hitherto been conferred upon a woman. The recipients of this recently formed order have been few in number, and all persons of world-wide fame, such as Lord Lister, the late Lord Kelvin, and Earl Roberts. No doubt it was as part of the tardy recognition of the services rendered in days gone by to their country by our veterans that this honor has been given to Miss Florence Nightingale, who is now nearly eighty-eight years of age.

Professor Osler, always ready to undertake a kindly action, performed the ceremony of presentation of a testimonial to the former assistant librarian of the Royal College of Surgeons, Mr. C. R. Hewitt, who has recently been translated to the Library of the Royal Society of Medicine. The testimonial, which took the form of a piece of silver plate and a check, had been subscribed to by a large number of medical men.

Another recent recognition of public service is the unveiling of a bust of the late Mr. George Herring at the Mansion House. Mr. Herring, who died last year, gave enormous sums of money to the Metropolitan Hospital Fund in addition to other charitable benefactions, notably the furnishing of Salvation Army-shelters for the homeless.

A famous physician has passed away since my last letter, Sir Alfred Garrod, who was perhaps best known as an authority on rheumatism and gout. He first introduced the term "rheumatoid arthritis." He was physician and subsequently consulting physician to King's College Hospital, and in 1896 was appointed Physician Extraordinary to the late Queen Victoria. The Moxon Gold Medal of the Royal College of Physicians for Research in Clinical Medicine was awarded to him in 1891. He died at the ripe age of eighty-eight years.

Sir Malcolm Morris is to be congratulated upon the honor which has recently been conferred upon him by the King, in

making him a Knight Commander of the Royal Victorian Order. As secretary of the British Congress of Tuberculosis in 1901, Mr. Malcolm Morris did good work and spared himself no trouble to make the Congress a real factor in the campaign against tuberculosis. He was also for several years the well-known editor of the *Practitioner*.

St. George's Hospital has seen many changes recently, not the least important being the development of its postgraduate teaching owing to the decline of the medical school for ordinary unqualified students, a decline shared by almost every hospital in London. But St. George's has a brilliant record behind it which dates back to 1734, when owing to disagreements amongst the Committee of the Westminster Infirmary, that institution was divided by two factions into two separate hospitals, the one becoming the Westminster and the other St. George's Hospital. It is reported that a history of St. George's Hospital is now to be written by Mr. Peachy, and one can well believe that it will make a most interesting volume, with its account of the days when Hyde Park Corner was in the suburbs, and when the great Hunter was still on the staff of the hospital.

PARIS LETTER.

BY R. H. TURNER, M.D. (PARIS).

Professor Albert Robin has recently published in the *Annals of Genito-Urinary Diseases* the treatment he has carried out in three cases of blennorrhagic rheumatism, and he remarks that medical treatment should be tried before having recourse to surgery. In the first case, one of acute polyarthritis, he gave 4 grammes of salicylate of soda every day, and did not treat the discharge, contenting himself with ordering an alkaline solution. In the second case there was cystitis as well as pyelonephritis, and urotropin, 1.50 grammes, was given daily concurrently with benzoate of soda to acidify the urine if needful, as this is required to obtain the formation of formaldehyde. If pyelitis persists,

Dr. Robin gives Haarlem oil (a mixture of essence of juniper and oil of laurel berries) in an emulsion of syrup of Canada balsam. As a last resort two to six pills of the following should be given:

Venetian turpentine, 10 grammes;
Camphor, 6 grammes;
Ext. opium, 0.25 gramme;
Ext. aconite, 0.15 gramme.

Make 60 pills.

A good ointment is:

Salicylic acid, 10 grammes;
Essence of turpentine, 10 grammes;
Lard, 10 grammes;
Vaselin, 80 grammes.

A third patient suffered from partial ankylosis and muscular atrophy. He was treated by massage, electricity (faradic), and cauterization. The general turpentine bath is also excellent.

Essence of turpentine,
Black soap, aa 100 grammes.

For one bath.

Hot air and mud baths are also excellent, as well as the general treatment with iron, arsenic, and the iodides.

It seems as if physicians in France were beginning to advocate the use of a moderate amount of wine at meals, this wine being of course diluted with water. The public has been led to think that all wine-drinking is injurious, and this has been hurtful to the wine trade. Amongst the most ardent advocates of the juice of the grape is Dr. Doléris, who considers that people in good health can drink wine. Dr. Doléris is the celebrated gynecologist, who was one of the first to describe the streptococcus, and is one of the best authorities on plastic surgery of the perineum and treatment of puerperal infection. He, like so many French physicians, takes an active interest in politics, has a horse-breeding farm, and occupies himself about agriculture in the south of France, his home. This matter of the use of wine was discussed at a recent meeting of the Society of Medicine, and the report, which was unanimously voted, recommended the use of wine even for children between ten and sixteen years of age, specifying however what qualities it

should possess, such as not too great acidity, 9 to 10 per cent of alcohol, and the quantity taken daily being not over a pint, diluted with water. A certificate should be insisted on, in which the various characteristics, such as acidity, proportion of alcohol, amount of tannin and potash, would be stated.

Paris has been so far this winter quite healthy, the mortality being relatively small, averaging only about 800 to 900 deaths a week. Smallpox is quite rare, there being no deaths in certain weeks; on the other hand, measles and scarlet fever are more frequent than usual, though less so than last spring. The mortality from scarlet fever is small, about 3 for 200 cases. Typhoid fever was not much seen this fall, the excellent supply of drinking-water being undoubtedly a cause of this. Typhoid fever is an illness frequently seen in Americans who have been traveling on the continent, and especially in Italy, and the first important symptoms are generally noticed when they get to Paris, where they remain some time before sailing. In such cases, taking place as they do at hotels and pensions, it is very hard to know what to do with the patient, as he frequently does not know French, and as the hotel-keeper will often enough not keep him, it is found necessary to take him to some hospital, where there will be only French nurses and French doctors. Until lately the Maison Municipale de Sante, which is under the direction of the Assistance Publique, was the only place of any importance where Americans could be taken in. Recently, however, two institutions have been founded in the Latin quarter for students, the Hostel in the Boulevard St. Michel, and the Trinity Lodge in the Rue Pierre Nicole. The Hostel is more for out-patients, though it has two or three beds for patients who do not need very close attention. At Trinity Lodge there are eight beds and a very good operating-room, the fittings of which were furnished by Miss Gould. The hospital numbers on its staff all the American physicians in Paris and a certain number of the English ones. The Lodge is doing excel-

lent work, and is really intended for the exclusive use of the students. As regards the American Hospital, which has been discussed so long, some ground with buildings has been bought out at Neuilly, a suburb of Paris, and the latter will be transformed so as to have sufficient room for twenty beds and an operating amphitheater. This hospital may be in working order by July of this year.

In a recent number of the *Presse Médicale* Dr. Romme publishes a report on a new treatment of osteomalacia by adrenalin. As is well known, it was thought at first that this disease was due to a lack of secretion of the ovaries; later the thyroid was thought to be the cause. Dr. Bossi, of Genoa, has reported several cases in which adrenalin injections were most beneficial, and he has also experimented on animals, removing from sheep one of the suprarenal glands. The results showed that lesions of the bones of the pelvis followed this mutilation. Puppel has also tried this treatment, but in chronic cases he considers castration to be the better course. The treatment consists in injections of half a cubic centimeter of a 1:1000 solution of adrenalin. In one of Bossi's cases 16 injections were sufficient; in another chronic case 103 were made, and the results were not so satisfactory.

Professor Fernet has recently read a report at a meeting of the Academy of Medicine in which he gives the statistics of mortality from syphilis in the Paris hospitals. This mortality is for acquired syphilis 2.25 per cent—2.74 for men, 1.60 for women. In the insane asylums the proportion is much larger, it being about 40 per cent. Hereditary syphilis, as shown by the statistics of maternities, is in 5.15 per cent of the cases the cause of a miscarriage. Still-born and premature births are in 18.21 per cent of the cases due to this disease, and up till the age of two syphilis is responsible for 10.48 per cent of the cases of death. These figures show that 1200 to 1500 deaths amongst adults are due yearly to syphilis, and 4000 amongst infants. According to Mr. Cheron, the Under-secretary

of War, syphilis is not so frequent in the French army as it is amongst civilians. There are only 6 per 1000 amongst the troops, whereas in civil life the proportion is 7 or 8. In Germany the army is quite healthy, the proportion being only 5.7 per 1000, in Russia 12 per 1000, in Austria 19 per 1000, and 13.4 in England. Certain troops are more affected than others—the Garde Republicaine is 21 per 1000, the firemen 14 per 1000, and Algerian disciplinary troops 31 per 1000. Metchnikoff's and Roux's prophylactic treatment by calomel ointment will undoubtedly improve these statistics.

At a meeting of the Society of Biology Drs. Claude and Gougerot described a case of simultaneous atrophy of several glands of the human body. A man, forty years old, suffering from alcoholism and tuberculosis, began to show rapid degeneracy of the testicles with complete loss of the sexual functions. The character was modified, there was disappearance of the hair, dryness of the skin, extreme sensitiveness to cold, pigmentation of the skin and mucous membranes, and a gradual diminution of arterial pressure. The thyroid body seemed to be diminished in size. The patient died later from pulmonary tuberculosis. The autopsy showed complete atrophy of the testicles, atrophic sclerosis of the suprarenal glands, and lesions of the pituitary gland and the spleen. It would seem as if all these lesions took place simultaneously.

Dr. Guerra-Coppioli, of Rome, has examined the pharyngeal reflex in 305 cases, and he has found that this reflex varies very much in frequency according to the age of the person. With children between the ages of twelve and sixteen, the reflex is weak in 24 per cent of the cases, and abolished in 8 per cent. These figures are 32 and 14 per cent for cases between twenty-five and fifty; and for patients between sixty and eighty the proportion is 42 and 36 per cent. These statistics show, when compared with those furnished by the examination of cases of hysteria and epilepsy, how little scientific value can be given to this reflex.

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IMPORTANT NOTICE TO SUBSCRIBERS.

The Post-office Department at Washington has recently issued a regulation which directly affects some of our subscribers. It declares that all subscriptions to periodicals must be paid in advance; that all renewals must be subject to the same conditions; that only four months' grace will be permitted with monthly periodicals, and that if subscriptions or renewals are not paid within this time copies of the journal to such persons *will be denied transmission in the mails at second-class rates*. Will our readers be considerate enough to bear this in mind and save embarrassment to themselves and to us by paying their renewals as promptly as possible? We are left with no power to extend credit. The government is supreme in matters of this kind, and we must observe its mandates.

As we understand it, the reason for this action on the part of the government is

simply this: A great many publishers of magazines and other lay periodicals send out enormous editions of their papers through the mails at the second-class rate of postage to those who cannot be classed as legitimate subscribers. Their motive in so doing is a desire to guarantee to their advertising patrons a large circulation. This practice causes an annual deficit in the Post-office Department, since the government is unable to transport matter of this kind at second-class rates save at a great loss. It is this deficit that the Department at Washington desires to avoid, hence the new regulations and restrictions. We hope the subscribers to the THERAPEUTIC GAZETTE who are delinquent will help us to observe the requirements of the Postmaster-General by remitting promptly for their subscription accounts.

THE PUBLISHER.

ORIGINAL COMMUNICATIONS.

TREATMENT OF PNEUMONIA.¹

BY M. HOWARD FUSSELL, M.D., PHILADELPHIA,
Assistant Professor of Medicine in the University of Pennsylvania.

Pneumonia is an acute infectious disease caused by the diplococcus pneumoniae. The disease is in reality a pneumococcemia with a usual localization in the lung. The mortality depends upon the age, the social condition, the habits of the patient, together with the degree of pneumococcemia. The degree of the latter, it would appear, has much more to do with the percentage of mortality than has the amount of lung in-

volved. A series of 465,400 cases of pneumonia collected by Wells shows that the mortality of pneumonia is 20.4 per cent.

Any method of treatment which professes to be specific, or even much superior to the average treatment, must show a mortality of much less than 20 per cent under all conditions in all sorts of patients, through a very long series.

As Musser and Morris in their article in Osler's System of Medicine have said:

"1. A number large enough to exclude

¹Part of the paper read before the Kensington Branch, Philadelphia County Medical Society, Jan. 6, 1908.

the personal equation and other qualifying features must be analyzed.

"2. The age, sex, social circumstances, and habits, the environment, character of epidemic, season of year, and circumstances of the life-history of the host as well as of the pneumococcus, and many other details, must be constant features in the groups of cases arranged for comparison. The pneumococcus may at one time be virulent, at another innocuous, or the host susceptible or relatively immune. Neither the host nor the organism are constant factors. Thus far in all literature there are no such comprehensive analyses. The thoughtful physician is compelled, therefore, to put aside such vaunted specifics and subscribe to lines of treatment based upon physiological principles, derived from our knowledge of the action of the organism and the reaction of the host."

I feel that if any physician is asked what his mortality of pneumonia is in private practice he will answer much less than 20 per cent. The author published in 1892 a series of 134 cases from private practice with a mortality of 16.4 per cent, while Howard, of Montreal, published a series of 170 cases with only 6 per cent mortality. Doubtless the marked difference in these two small series was due to the age, social condition, or habits of the patients, elements which make greatly for high or low mortality.

So far there has not been discovered a specific treatment for pneumonia. The one which promises most is treatment with anti-pneumococcic serum. This has failed so far either because of its low potentiality or because there are several strains of pneumococci not to be distinguished.

Quinine in massive doses is an old treatment lately revived by Galbraith. The author has used it, but with no greater success than the symptomatic treatment to be described below.

Those of us who had the honor to sit under the never-to-be-forgotten teaching of Horatio C. Wood remember how that in-

comparable teacher impressed the value of *veratrum viride* in the early stages of pneumonia. He claimed that the disease was frequently aborted or at least made less severe by the "bleeding of the patient into his own vessels." The writer must confess to lack of courage in never having used this plan of treatment, but it has been tried by others less timorous, and like other specifics has been found wanting.

As the basis of treatment, four requisites stand out as all-important; they are at the disposal of all, rich and poor alike: *Rest, fresh air, a nurse, and watchfulness* on the part of the physician.

Rest.—This must be absolute from the beginning of the infection until convalescence is well established. In the beginning and during the course of the disease this is important, because the battle is between the resistance of the individual on the one hand and the poisoning by the disease on the other. Absolute rest conserves the vital forces, thus helping to resist the effect of the poisons on the economy. The patient should use a urinal and bedpan. His food should be given from utensils in such a manner that he need not sit up. This is easily managed by giving all liquids through a tube or a drinking-cup, and semisolids should be given with a spoon. Unless urgent need for stimulation exists he should not be disturbed for his medicine. Frequent physical examinations should not be made, not more than once in twenty-four hours, and when they are made the patient should be rolled on his side and not be allowed to sit up. The writer has seen the fever kept up, the intoxication increased, and death supervene in a child which was so badly trained that the approach of its nurse or physician was the signal for violent crying, and of tossing about in the bed. Rest is as important after the crisis as during the fever. The intoxication has lessened the resistance of the tissues and often actually destroyed their integrity, particularly of the heart muscle.

I have on record a case in which a woman of fifty-five had passed successfully through

a severe attack of pneumonia. The temperature was normal on the morning visit and the patient comfortable. Immediately after the visit was made the patient insisted upon leaving her bed and going to a commode. Immediate collapse with weak heart action occurred, and the patient died in a few hours.

Fresh air stimulates the patient, gives him oxygen as pure as the air of the locality allows, and inhibits the growth of the pneumococcus. Have the windows of the room wide open, day and night. Protect the patient by light wool underwear, and if necessary a cap on the head, and an abundance of bed covering. Protect the nurses by proper clothing. There is no reason for keeping heat out of the room. As a matter of fact, if the room is well heated and the windows and doors are open the atmosphere of the room is more frequently changed than if there is no fire in the room. When this method is spoken of the laity appear to believe that the reduction of the temperature is the point desired—indeed, some physicians appear to have the same idea. I have seen the temperature of the room reduced to 60° or 70° by reducing the heat admitted to the room, but not by opening the windows. The result was a cold room with air breathed over and over again. During the past week a case was seen in consultation, in which one lung was extensively involved; the room was cold, about 8x12 feet in dimensions, and both window and door tightly closed. Two or three persons besides the patient were constantly in the room. Could anything be more potent to depress a patient?

Opening the windows, and keeping them open all hours of the day and night, cannot be carried out in private practice without the complete concurrence of the members of the patient's family.

We still have much missionary work to do both among the laity and among physicians. The great mass of individuals are obsessed by the fear of "catching cold." Windows and doors of the sick-room are closed, and heavy bedclothing piled on the suffering

patient, who lies in a drenching sweat. Teach them that fresh air never gives any one cold. Teach them that the vitiated air of our living, working, and sleeping rooms so lowers our vitality that infections constantly occur, hence "catching cold." In my wards devoted to pneumonia in St. Timothy's Hospital, Roxborough, the windows are always wide open. The patients are clothed warmly. They never complain of the cold, but always express themselves as comfortable. Since I have used this method my medication in pneumonia is almost *nil*, and so far my mortality small. That this means is not considered a "treatment" by some physicians is evidenced by the remarks of a good old doctor, with whom I saw a case. After I had fully spoken of the value of fresh air, he remarked, "Well, yes, doctor; but how shall we treat the patient?"

The Nurse.—In order to carry out the above rules, which I believe of paramount importance, a good nurse is a necessity. A trained nurse can always be had in or near our cities. If the patient is not able to pay for the services of a good nurse, then he should be sent to a hospital. In the country one is forced to do with a person not trained. In order that this person be of value, she should be instructed minutely and the importance of the details impressed upon her.

Watchfulness of the physician for changes in the patient are of great importance. For this reason two visits in the twenty-four hours should always be made, unless the case is in the hands of a competent nurse, who can report by telephone. Twenty-four hours is an abundance of time for a weakened heart to become so feeble that it fails before any remedy administered can be of effect. Especially should the doctor be watchful during the last days of the disease; then it is that complications so frequently occur.

These four valuable aids secured, each case must be treated upon its own merits. The only routine allowable is the measures above spoken of.

Chill.—The initial chill is usually over before we reach the house; however, when seen the comfort of the patient is best attended to by hot applications, hot water to the feet and especially to the small of the back. Occasionally a hypodermic of morphine is necessary to overcome the shock of the chill.

Pain.—Frequently the initial symptom is severe, agonizing pain referred to the chest or abdomen. Applications of cold or heat will often relieve this. Dry cups applied to the chest wall when this is the seat of the pain bring almost instant relief. Often, however, this pain is so severe that opium is necessary. The best method is the administration of morphine hypodermically; less of the opiate is used, and the effect is more prompt and certain. Two cases, both in elderly persons, have recently been treated in which collapse on account of pain seemed imminent; both were restored by the administration of a small dose of morphine hypodermically. Usually as the case progresses the pain becomes less severe, owing to the formation of an exudate or the dulling of the sensibility of the pleura, but often enough the pain needs the application of one of these methods during the entire course of the disease.

The hacking, unproductive cough due to the pleurisy is frequently so severe that opiates, preferably codeine because of its less severe constitutional effects, are necessary. A prescription such as the following is efficacious:

℞ Codeinæ sulph., gr. iij;
Aquæ dest., q. s. f3ij.

Sig.: f3j every two or three hours.

Or the same amount of codeine may be given in pill form.

Sweet cough mixtures are not to be used. However, if there is much expectoration due to bronchitis a mixture such as follows is valuable:

℞ Ammonii chloridi,
Ammonii carbonatis, aa 3j;
Misturæ glycyrrhizæ co., q. s. f3iij.

Sig.: f3j every three hours.

I most heartily believe that the cough is relieved by fresh air in the room, and by its employment the above remedies become less necessary.

As rest, complete rest, is one of the prime factors in the treatment of pneumonia, it follows that the great physical exertion caused by restlessness and delirium must be controlled. In hospitals it is the habit to control patients by straps. This is most reprehensible. The hospital authorities should supply sufficient nurses to allow each delirious patient a special nurse when conditions demand it. I have seen patients mechanically restrained practically kill themselves by their efforts to get relief from their bonds.

Usually doses of 30 grains of bromide of ammonium will be efficient. Frequently, however, hypodermics of morphine given tentatively, $\frac{1}{8}$ grain, to be repeated when necessary, will keep a patient quiet for several hours. This is particularly noticeable in alcoholics.

The rest thus obtained allows the heart to recuperate, and the patient thus withstands his attack.

Often a case will go through an entire attack without stimulation of any kind. Certainly digitalis, strychnine, and whisky should not be given in a routine manner simply because the patient has pneumonia. Use them when needed, and use them in good and sufficient doses. When the blood-pressure begins to fall, the heart to dilate, the patient to become somewhat cyanotic, then is the time for stimulation. I believe that the use of the tonometer for measuring the blood-pressure is of the utmost value in deciding when to use stimulation.

The heart should be examined daily and its true condition always known. At the first sign of failure of pressure, digitalis, strychnine, or whisky should be given, care being taken that while enough is given the system is not overwhelmed by the drug. This can be told by frequent examination of the heart. Nitroglycerin lowers the blood-pressure. It is not a heart stimulant. Its

use in pneumonia, I think, is this: in the rare cases in which blood-pressure is high it may be given in order to dilate the peripheral vessels.

When large doses of digitalis are given I am quite certain that it is more efficacious when given in conjunction with nitroglycerin, because the nitroglycerin dilates the peripheral vessels; the digitalis stimulates the heart. If there is less peripheral resistance the effect of the digitalis is increased. Whisky I give routinely when the patient is a habitual drunkard or even a continuous drinker. Then it is of value. It is also of value when the heart begins to fail.

Fever usually need not concern us, but when it is excessive, 105° or over, cold baths may give excellent results. They make the patient comfortable and stimulate his circulation.

Never use the ordinary antipyretics—the coal-tar preparations. These drugs, while they certainly lower the temperature, unquestionably do so at the expense of depressing the heart, a thing to be guarded against.

Fresh, unbreathed air with laxatives and food are the most important remedies. The bowels should be moved daily either with salts or with calomel in divided doses.

High enemata of salt solution are most efficacious, and in certain severe conditions I have used hypodermoclysis with excellent results.

The mouth and teeth should be kept clean, the teeth brushed and sordes removed. Food is of the utmost importance. Enough must be given to sustain the system, but it must be selected, so that it can be easily digested and give rise to as little abdominal distention as possible. Milk in the form of junket, given plain or peptonized, is usually well borne and is certainly sufficient. If the milk is not well borne, albumin water and beef juice may be given with excellent results.

Avoid poultices, either home-made or in the form of the various pastes on the market. Both probably relieve pain, but

this can be done much more efficaciously by cold or hot water coils, by cups, or by cold compresses. These pastes are sold by the carload and used much by physicians. They are absolutely useless in pneumonia, I believe worse than useless; they do not absorb moisture or poisons, as proven by Morris. The manufacturers claim they do. They are dirty, impede the breathing, and interfere with the examination of the patient. Even though the manufacturers' claims are legitimate, the manner in which physicians use them is senseless—a little bit is spread between the shoulders or on the sternum. Of course, this is valueless.

Bloodletting has its place. When the heart is laboring, the right heart much dilated, with a loud, accentuated second sound, a few ounces of blood removed will certainly give relief. The pulse will become strong, the breathing and cyanosis better. It is never to be employed when the pulse is feeble, due to general cardiac dilatation, and I have always feared to use it when the pulse is feeble from the toxemia.

Nephritis, which often occurs in pneumonia, needs little treatment; usually water, laxatives, and diaphoretics will do good. A favorite mixture of mine which apparently acts well is:

℞ Potassii bromidi,
Potassii citrat., āā 3ij;
Succus limonis, fʒss;
Syrupi, q. s. fʒiij.

Sig.: 3ij in water every 2 or 3 hours.

I have seen the urine clear up, the fever decrease, and the patient more comfortable under its use. At any rate it makes the patient feel that something is being done for him. In all cases the sputum should be destroyed, preferably by burning.

The treatment of pneumonia may be summed up as follows:

It consists of rest, air, and food for the patient; a skilled nurse; constant watchfulness on the part of the physician for any undiscovered symptoms; and a masterful inactivity as to indiscriminate drugging.

RADIUM THERAPY.

BY JOHN B. SHOBER, A.M., M.D., PHILADELPHIA.

Gynecologist to the American Hospital for Diseases of the Stomach, the Howard Hospital, and the Gynecean Hospital.

The history of the discovery of radium by Mme. Curie in 1898 is too well known to bear repetition on this occasion, and it would occupy too much time to enter into a discussion of its physical properties. Indeed, in the opinion of the writer, the subject is one which requires such exactness of expression in the statement of facts that it should be undertaken only by the trained and expert physicist. The physician who is fortunate enough to possess a working quantity of this rare and wonderful element may however with propriety discuss the results obtained and report the methods he has employed in making use of its various properties.

Pitchblende, the complex and compound

grammes of the Curie 300,000 radium chloride could with difficulty be obtained for less than \$250 or \$300.

Radium has nearly doubled in value during the past two or three years. This is due to the fact that the Austrian government has prohibited further exportation of the ore.

The writer is the fortunate possessor of three beautiful samples of strong radium: 10 milligrammes radium chloride, Curie, 300,000; 10 milligrammes radium chloride, Curie, 300,000; 10 milligrammes radium bromide, German, 1,000,000.

Radium is usually supplied in small glass hermetically sealed tubes 1/16 inch thick. As these tubes are easily broken, and as

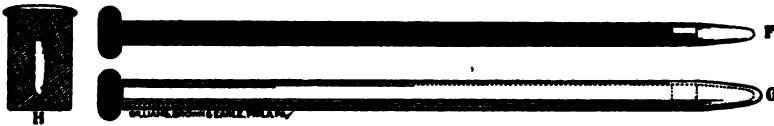


Fig. 1.

ore from which radium is obtained, is found in Joachimsthal, Bohemia. From a ton of this ore, rich in the radioactive mineral uranium, only a small fraction of a grain of radium can be extracted. It also contains small quantities of the radioactive elements polonium, thorium, and actinium. Radium has never been isolated, but exists in the form of a chloride or a bromide.

The strength of a given quantity of radium chloride or bromide is the measure of its radioactivity, using the radioactivity of uranium as a unit.

When we speak of a 7000 radioactive radium we mean that it is 7000 times as radioactive as the element uranium.

The strongest radium bromide yet obtained has a denomination of 1,800,000. The market price of 10 milligrammes (1/6 of a grain) of 1,800,000 radium to-day is said to be \$1000. The same quantity of 1,000,000 radium would probably cost in the neighborhood of \$500, and 10 milli-

they have been known to explode, resulting in loss of the radium, and as glass prevents the passage of the beta-rays, I have placed the two samples of the 300,000 Curie radium in small aluminum capsules, because aluminum offers very little resistance to the beta-rays. These capsules can be screwed on a slender rod made of hard rubber or a silver rod which can be bent to any shape. For purposes of cleanliness or sterilization the rods can be inserted into closed tubes made of glass, aluminum, or celluloid. At present I am using celluloid tubes, as they offer little if any resistance to the beta- or gamma-rays. I have named this instrument a "radiode" (Fig. 1). The capsules are detachable and can be used for surface applications. The radiode permits the application of radium to any accessible cavity. The capsules can also be fixed in the end of catheters and applied to the esophagus, stomach, urethra, or the bladder. The sample of 1,000,000 German radium is contained

clearly, they have immense penetrating powers. This is nicely illustrated in Fig. 4, where 10 milligrammes of 1,000,000 German radium cast a shadow of a pair of scissors through a granite paving-block 5 inches thick and a pamphlet of 33 pages. The time of exposure was $25\frac{1}{2}$ hours. Note how the rays have penetrated the thin part of the blades.

The physical properties of the rays from a Crookes tube and from radium are almost identical, and it is not surprising to find that the same pathological conditions which are successfully treated by x -rays yield also to the influence of radium. The two agents may be used as complements to each other. Sometimes one may be successful when the other will fail, and *vice versa*; and, again, best results are often obtained by using them in conjunction with each other. For example, in my own practice all cases of inoperable cancer of the uterus or cervix receive general x -ray treatment of the pelvis every other day, and on alternate days radium is applied to the cavity of the uterus or cervix for one or two hours.

Much uncertainty exists as to the length of time which should be allowed for an

FIG. 2.

in a small metal cell having a thin aluminum floor. This cell can be screwed on a slender rod and thus used for cavity work. When not in use the aluminum capsules and metal cell are kept in lead-lined boxes in order to protect the operator and photographic plates from the influence of the radium rays.

Fig. 2 is a picture made with 10 milligrammes 300,000 Curie radium in the aluminum capsule, the object being to determine the relative resistance offered by various substances to the radium rays. The rays have penetrated the substances, casting shadows of the lead letters under them. It will be seen that aluminum $1/16$ inch offers as little resistance as a cover-glass $1/200$ inch thick, and less resistance than paste-board $1/8$ inch, rubber sheeting $1/8$ inch, wood $1/4$ inch, and glass $1/8$ inch. The round object is a penny; the central object is a shell. Radium rays, unlike x -rays, do not clearly differentiate structure from structure or different thicknesses of the same structure. Compare picture of shell in Fig. 3 made with x -rays with the same picture in Fig. 2 made with radium.

While radium rays do not differentiate

FIG. 3.

application of radium. This is a question to which no definite answer can be given. One should proceed cautiously and be governed by his experience and a thorough familiarity with the strength of the radium he is using. In general it may be said that we have erred on the side of safety. Perhaps the best guide is to determine the time required to produce a decided erythematous reaction on healthy skin. If it takes two hours to produce such a reaction in seven days, it would be safe to apply the radium

for the purpose of relieving neuralgia. A short period of erythema usually results, but when applied too long pigmentation of the skin takes place, which may require months to clear up. My Curie radium requires one hour to produce a marked erythema on healthy skin. In neuralgia about the face I apply it for one-half hour on spots one-half inch apart along the course of the nerve. In sciatica I do not hesitate to allow it to remain one hour on each spot.

I might here state the conditions in which I have used radium, indicating the average time and intervals of application:

Warts, verruca vulgaris, one hour, interval one week.

Furuncle, one-half to one hour, interval two to four days.

Carbuncle, one hour, interval six to twelve hours.

Tubercular glands, one-half to one hour, interval four to six days.

Facial neuralgia, one-half hour on each spot, interval seven days.

Sciatica, neuritis, and herpes zoster, one hour on each spot, often using three capsules at a time.

Nevi and pigmented mole, one hour, interval two to four days.

Psoriasis, fifteen minutes over different areas, interval four to six days for each spot.

Lupus, one-half to one hour, interval four to six days for each spot.

Epithelioma, one-half to one hour, interval four to six days for each spot.

Cancer, one to two hours, interval two to six days for each spot.

Sarcoma, one to two hours, interval two to six days for each spot.

Trachoma, one-half hour, interval three to six days.

Keloid, one to two hours, interval three to six days.

Lumbago, one to two hours on different spots, often using two or three capsules.

Goitre, twenty-four hours, radium inserted into center of tumor and removed the next day.

Radium has remarkable sedative power. It relieves pain almost immediately, whether

FIG. 4.

for one hour on the same spot once a week. The more I use radium the bolder I am with it. I have never seen a radium burn which has caused me much anxiety. A violent reaction followed the application of 300,000 Curie for one hour four times in two weeks in the case of a baby with an elevated angiomatous nevus of the face. It rapidly subsided, however, leaving an absolutely clean surface with no scar. One should be cautious in applying radium on healthy skin, especially about the face,

organic, nervous, or neuralgic. Foveau de Courmelles (*Semaine Médicale*, Paris, Aug. 17, 1904) reports two cases of locomotor ataxia in which the girdle pains were cured, one by radium and the other by the Roentgen rays. The subjects were not informed in regard to the nature of the treatment, so he thinks that suggestion may be excluded. The writer has a personal letter from Dr. John Ege, of Reading, Pa., who is treating successfully a case of locomotor ataxia with radium. After four weeks' treatment the patient had gained 10 pounds in weight, the pains were greatly relieved, and he had recovered control of the bladder and rectum. He applies the radium along the course of the spine from occiput to sacrum for one-half hour in spots half an inch apart.

Many other pathological conditions have been more or less successfully treated with this wonderful agent. For instance, Robert Abbe reports cases of enchondroma, pigmented mole, melanoplakia, leucoplakia, granulated lids, seborrhea of lip, hypertrophy of tonsil, ganglion of wrist, Dupuytren contraction, angioma of face, tic-douloureux, and uterine fibroid.

All this may sound bizarre, but we are still in the experimental stage and are justified in trying this "subtle agent," so aptly termed by Abbe, in almost any condition.

In my experience the diseases which yield the best results, and which I undertake with some degree of confidence, are warts, furuncle, carbuncle, acute neuralgias, nevi, epithelioma of skin, secondary recurrent cancerous nodules, keloid, and lumbago. In addition I believe we have in radium a most valuable agent in the treatment of inoperable carcinoma of the cervix and uterus, always however when possible in conjunction with the Roentgen rays. In these cases, whether the x -rays are used or not, pain is always markedly relieved and hemorrhage, discharge, and odor are controlled, and life in comparative comfort is apparently prolonged. In one case, a metastatic nodule in the vagina, following a panhysterectomy for cancer of the uterus, melted away in five weeks under the influence of radium applications.

Dr. Robert Abbe was the first to use radium in exophthalmic goitre, and reported his first case in the *Archives of the Roentgen Ray* for March, 1905. Encouraged by the brilliant result, in April of the same year, I had an opportunity to treat one case and followed Dr. Abbe's technique (Fig. 5). The patient was a married woman, forty-two years old, the mother of three children. The family history was negative. She had always enjoyed good health until the previous year, when she began to complain of the following symptoms, which were increasing in severity: Dyspnea, palpitation, disturbances of vision, constant hacking

FIG. 5.

cough, profuse perspiration on exertion, constant and severe headache, nervousness, frequent tremors, and insomnia. During the previous eighteen months the tumor grew rapidly, attaining the size of a flattened orange. It involved both lobes and isthmus of the thyroid, the right lobe being much the larger. There was no Von Graefe sign, no exophthalmos, no fine tremor, no pulsation or bruit; the tumor was of firm, elastic consistency. The pulse was 110-128, with increased arterial tension.

Under cocaine anesthesia an aluminum capsule, containing 10 milligrammes of Curie 300,000 radium, covered with light gutta-percha tissue and placed in the end of

a narrow gauze wick, was plunged through a bistoury stab into the center of the right lobe and allowed to remain for twenty-four hours. The gauze and sutures controlled the moderate hemorrhage. The wound healed promptly and the tumor began to soften and slightly decrease in size. There has been no headache since the day of the operation. All other symptoms slowly improved. She seldom suffers from palpitation or dyspnea, has no disturbances of vision, no cough, no choking, is much less nervous, and has no tremors or shaking attacks. One year later the general mass of the tumor was somewhat smaller and decidedly harder than it was. She wore smaller collars. I saw her in May of this year and the improvement had continued.

I have met with very pronounced success in the treatment of carbuncle with radium. I will mention one case as a type:

John W., aged thirty-nine, weight 299 pounds. Massive carbuncle back of neck extending from occiput to nape of neck and from mastoid to mastoid; it was hard, acutely painful, and five small sinuses exuded slowly a drop or so of pus. There was fever, and patient was septic. Cleansed and dressed with mild ichthyol ointment. Rad-

ium, 10 milligrammes Curie 300,000, was applied over dressing one-half to one hour twice daily for five days. There was immediate amelioration of pain, with increasing discharge of pus, finally becoming profuse on second day. Mass became soft and fluctuating on third day, and was converted into a simple abscess cavity. Large sloughs were extracted through several sinuses on fifth day. Rapid resolution and complete healing without scar on tenth day.

Why and how are the results obtained with radium brought about? We do not know. Are the rays bactericidal, do they promote chemical changes in the tissues, or do they act mechanically? Microscopical studies of tissues submitted to the action of radium seem to indicate that cellular life is destroyed, resulting in a liquefaction necrosis which favors absorption. An endarteritis with destruction of the endothelial cells takes place, and if the exposure to the rays has not been too long we note an increase of connective tissue with complete destruction of embryonic and pathological cells, and stimulation of the normal cells to new growth. The effect of the Becquerel or radium rays upon living tissues is similar to the effect produced by x -rays.

IODALBIN—AN ORGANIC IODINE AS A THERAPEUTIC AGENT.

BY L. W. BREMERMAN, A.M., M.D.,

Formerly Professor Genito-urinary Surgery, New York School Clinical Medicine; Formerly Visiting Surgeon. West-side German Dispensary, New York; Visiting Surgeon, Oak Park Hospital; Member of American and Chicago Urological Association, and Member Chicago Medical Society.

The medical profession have for many years recognized the advantage gained in many conditions by the administration of the iodides, particularly potassium iodide, as well as their untoward effects, namely, the annoying and sometimes grave gastrointestinal symptoms, the very disagreeable taste, the tendency to kidney irritation, frequently the large amount of drug necessary before the desired action is obtained, and, owing to the accumulative action, marked toxic effects result, as well as an idiosyncrasy, which is very common.

With these disadvantages in mind we

have for years been seeking an iodine compound which would be devoid of all or most of the disadvantages and at the same time lose none of its therapeutic efficiency.

About four years ago I had brought to my attention an iodine compound named iodalbin, which at the time was in the experimental stage. I was requested to test it in every possible way and furnish a report as to whether or not the drug would prove to be a suitable substitute for the other iodine compounds.

After very thorough and careful experimentation, both in private practice and in

my dispensary work, I furnished a favorable report, which I requested should not be published.

I have been using the combination exclusively during the entire time since my report, and after four years I feel that I am fully justified in writing a favorable report upon this drug for the benefit of the profession.

Iodalbin is an organic compound containing 21 per cent of iodine in combination with egg-albumin. The iodine is held in chemical combination since it only reacts to the usual test, after the compound is broken down and decomposed.

Iodalbin is in powder form, of reddish color, tasteless (practically), and of a peculiar but rather pleasant odor. It is insoluble in water, acid, alcohol, and in fact all of the ordinary solvents, but is *slowly soluble in alkaline solutions*. The powder is not suggestive of iodine except in color, and is non-toxic.

The physiological action of iodalbin is the same as that of the iodine compounds in general. It is very readily assimilated, but its absorption is not as rapid as potassium or sodium iodide. It is eliminated through the kidneys, the skin, and the salivary glands.

The medicinal use of iodalbin may be divided into three great important divisions:

1. *Syphilis*.—In the treatment of this disease iodalbin has proven a perfect substitute for potassium iodide, but very much smaller doses are necessary.

The fact that potassium iodide contains 76 per cent iodine, while iodalbin has only 21 per cent, would naturally produce the belief that a greater quantity of the latter would be necessary. Experience proves that this is not the case, as I have never been compelled to administer over seventy-five grains during twenty-four hours; usually from ten to twenty grains three times daily is sufficient.

I might say a word concerning the method of administration in the treatment of syphilis.

In the ordinary routine treatment iodalbin plays no part, as it possesses no antisypilitic

virtue, like in this respect to potassium iodide. For this reason I do not recommend a mixed variety of routine treatment. Iodalbin will aid in healing the lesion, but mercury is the only curative agent. If a mixed form of treatment be established the lesion may clear up, due to the efficiency of the iodine compound while the amount of mercury is deficient.

The method I employ is the immediate administration of mercury just as soon as the diagnosis is made, either by mouth or intramuscular injections or by inunctions, administering sufficient quantity to overcome the lesion. The method continues as an interrupted symptomatic form for two and one-half years, and then for a period of six months a continual dosage of iodalbin as a substitute for potassium iodide, ranging from six to fifteen grains three times daily.

There is a certain variety of cases in which the lesions seem to be particularly malignant, when large doses of the mercury will not readily bring about resolution. These cases will require iodalbin to aid the mercurial, but must be discontinued as soon as the lesion disappears.

Another class of cases in which I prescribe iodalbin in conjunction with mercury are those in which the location of the lesion is peculiarly prone to produce untoward effects, namely, lesions of the throat, eyelid, or lips.

In all forms of nervous syphilis, with the exception of late sclerotic changes and locomotor ataxia, it is my practice to administer iodalbin as a standard remedy. If, however, there is a brain lesion which is a daily menace to the patient's life I administer iodalbin and mercury in combination.

In all forms of tertiary lesion the iodides are indispensable, and in those in which a long extended course of treatment is indicated iodalbin is invaluable.

2. *Metallic Poisoning*.—Iodalbin may be used as a substitute for potassium iodide in chronic metallic poisoning, as lead, zinc, arsenic, or mercurial, and as it is free from all the disagreeable disadvantages of potassium iodide it is, in my opinion, a far better drug to use.

3. *Rheumatism*.—In all forms of secondary or subacute rheumatism, where the joints are still swollen and the case seems to be obstinate, where patients are sometimes a little better and then again worse, iodalbin is particularly efficacious.

There are a great many other conditions, almost too numerous to be mentioned, in which iodalbin may be substituted for potassium iodide with marked advantage. Of kidney cases in particular is this true, for the potassium iodide proves sometimes to be very harmful, due to its irritating qualities. Iodalbin will cause a marked increase in urinary flow and can be used with benefit in cases of parenchymatous nephritis (croupous nephritis). I have seen a marked dropsical condition very rapidly disappear upon the administration of this drug.

In the true bronchial type of asthma, iodalbin is of service, for in these cases there is very apt to be stomach irritation, and potassium iodide would aggravate this condition and render it necessary to discontinue its use.

Iodalbin may be administered either in powder form or five-grain capsules. Begin, as a rule, with five or ten grains three times daily, preferably before meals; increase the daily dose, if necessary, five grains until the required amount is reached. No fear of any gastric disturbances need be taken into consideration, for the drug is only soluble in alkaline mixture, hence must pass from the stomach into the intestines before it is absorbed and assimilated. There have been under my care during the time that I have been using iodalbin numerous and exceedingly interesting cases, and I will endeavor to report a few of the more instructive.

J. J. C., laborer, married, came under my care in August, 1903. Family history negative. Previous history, relative to present condition, negative. Present history: Patient came to me with a peculiar sore on his lower left eyelid of nearly three weeks' duration. He informed me that he had been treated by several physicians, but that the sore was continually growing worse. There was not much pain, but he was an-

nnoyed by a continuous "watering" of the eye. The patient informed me that his general health was excellent.

Examination: I discovered on the lower left eyelid an oval-shaped sore extending from the inner to the outer canthus and to the margin of the lid; at the central point the margin of the lid was involved in the sore. The sore was indurated and was rather clean, with little exudation. On further examination I discovered a beginning typical secondary rash with involvement of the cervical glands and the epitrochlears. The patient informed me that he had frequented a house of prostitution about six weeks before and had intercourse. I questioned him concerning the woman with whom he cohabited, and was informed that as far as he could see she was free from disease. I could not elicit any direct history as to the means of inoculation, but the sore on the eye was the initial lesion of syphilis.

I immediately began treatment, which consisted in internal medication with local application to the sore. Increasing doses of mercuriol and potassium iodide were administered until patient was taking nine grains per day of mercuriol and forty-five grains of potassium iodide in milk. The patient's stomach went back on him, and I discontinued the use of potassium iodide, substituting iodalbin in the same dose. This had no untoward effect whatsoever on the stomach, and the gastric condition immediately cleared up. The potassium iodide was blamed for the gastric disturbance, because I knew what the mercuriol would and would not do. In four weeks the lesion was entirely healed, with only a slight deformity due to cicatrization, pulling the lower lid downward and preventing the lids from completely closing. At this time I began the use of iodalbin, and kept the patient on mercuriol for one year continually. I then gave him a rest for a few weeks and returned to the treatment again, which lasted for one and a half years. At this time I repeated the iodalbin, keeping him on ten grains three times daily for six

months. The patient made an uninterrupted recovery.

Another interesting phase of this case was that the patient was married. His wife was seven months pregnant. She was infected by her husband and came under my treatment, which consisted of large internal doses of mercuriol. I asked permission to deliver the child, which went to full term and was born, as far as I could tell by a very careful examination, free from syphilis. Implicit directions were given the mother in relation to the care of the child. Eight weeks later the mother brought the child to me suffering with ulcerations surrounding the anal opening. I diagnosed the case as syphilis and began inunctions of unguentum hydrargyri. The child became very much worse, and the mother took it to the hospital, where about six weeks later it died. The mother continued her treatment faithfully, and about one year later she became pregnant once more, but aborted at about three months. She also made an uninterrupted recovery, and just prior to the time I discharged her she became pregnant once more. I continued her however on iodalbum ten grains three times daily during the entire pregnancy. She was delivered at the New York Lying-in Hospital of a normal child. Since moving to Chicago I have lost observation of this family, but up to the time I left they were all in normal and excellent condition, apparently.

W. W. Q., male, twenty-four years old, chauffeur, single, came under my care December 31, 1903. Family history negative. Previous history negative. Present history: Patient made his own diagnosis of syphilis, and he was correct. Several weeks prior he was exposed. Examination showed initial lesion on penis and a marked and profuse secondary eruption covering the entire body.

Treatment: Began increasing doses of mercuriol, but the condition became worse, so I immediately changed treatment to the intramuscular injection of mercury salicylate in increasing doses. Condition still began to get worse, and I discontinued the injections in favor of the inunction of

unguentum hydrargyri in frequent and rapidly increasing doses. He suddenly became markedly salivated, due to the accumulated action of the mercury from the injections which had been given, which were delayed in their action, and the patient got the benefit of the accumulation. His condition was rather serious.

I stopped all mercurial treatment and placed him immediately upon iodalbum, working his dose up rapidly to twenty-five grains three times daily. His symptoms promptly cleared up, and I continued the iodalbum alone for several weeks, when I began to administer mercuriol, beginning one grain three times daily, increasing one grain every third day. This continued until I had the patient taking six grains three times daily, when I increased the dose of iodalbum five grains every second day. This continued until the patient was only taking mercuriol, but I found it necessary to increase the dose to twelve grains three times daily, which he took continually for nearly three years uninterruptedly. He showed no sign nor symptom of the disease whatsoever after the beginning conditions were eradicated.

Just prior to my leaving New York I placed the patient on iodalbum, having discontinued the mercuriol. He was taking thirty grains a day and has continued to do so, I presume, until the present time.

In all the cases that I have administered iodalbum, I have only had one in which I found it necessary to discontinue the drug from apparent untoward effects. This patient suffered with rather severe nausea and vomiting. I could not understand the cause, so discontinued the use of the iodalbum, fearing that there might be an individual idiosyncrasy, but the vomiting and nausea did not cease, and I learned that the patient was drinking incessantly. He eventually drifted from under my care.

A. McB., female, aged fifty-five, widow. Family history negative. Previous history: Had been well up to last July, when she had an attack of appendicitis, for which she was operated upon.

In the early part of August I saw the

patient for the first time, having been called in consultation. Patient was in fair physical condition and was recovering slowly from the effects of the operation. There was a sinus in the abdominal wound which refused to heal and poured forth a large quantity of secretion. Upon examination this proved to be urine, showing that during the course of the operation the ureter had been injured, resulting in a urinary fistula.

I recommended ureteral catheterization first to endeavor to pass a catheter up the injured ureter to drain the kidney, and thus facilitate the healing of the fistula, and also to ascertain whether or not there was another normally functioning organ on the opposite side. I was unable to get the catheter beyond a point six inches from the bladder on the right side. I used several catheters of different size, but was unable to pass the point of injury. The other side drained a normal sample of urine, and from the tests for function I found the left kidney was normal in this respect as well. After another attempt to pass a catheter into the pelvis of the right kidney, which proved unsuccessful, I recommended ureteral anastomosis, and if I found this impossible I requested consent to nephrotomize. A few days later I operated, and after working for some time trying to break up a mass of adhesions, I thought it the safest procedure to remove the kidney. This was done, and the kidney was found to be nearly twice the normal size; upon section it showed areas of pus infection and the pelvis contained a large amount of pus, and as it proved I was fully justified in removing the kidney. It was far better for the patient that I was unable to anastomose the ureteral ends. From the operation the patient made an uninterrupted recovery, but two days later my attention was called to a sore which had developed upon the region of the great trochanter on the left thigh. The tissue rapidly broke down, forming a foul, sloughing sore. Careful treatment seemed to do little good, and the condition became worse. There was no history of a specific condition,

but nevertheless I concluded to place her upon iodalbin and keep a watchful eye upon the action of her *one kidney*. I began with five grains three times daily, and gradually increased the dose until she was taking forty-five grains daily, which dose I kept her on for three months continually. The sore began to heal, and in a short time was completely cured.

The particularly interesting feature of her case is the fact that there was not the least kidney irritation following the use of the drug.

The urine was watched closely—in fact an examination was made almost daily. The woman at the present writing is entirely recovered and enjoying excellent health. I have discontinued the use of iodalbin in her case.

In summing up the therapeutic advantages of iodalbin over the salts of the alkalies used ordinarily (potassium, sodium, etc.) we find:

1. It is practically tasteless, whereas the iodides commonly used are very distasteful.
2. It passes through the stomach unchanged and does not cause gastric distress, as do the alkaline iodides.
3. Being stable and insoluble it may be administered in powders, tablets, or capsules; in water, coffee, chocolate, wines; and, in fact, any beverage or food not alkaline in reaction.
4. It passes through the stomach unchanged, but it becomes dissolved in the alkaline secretions of the intestines and is slowly absorbed.
5. The drug becomes soluble before absorption, and does not produce the exaggerated effect which follows the absorption of the very soluble iodides of the alkalies.
6. A less quantity of iodalbin is necessary to produce an effect than the alkaline iodides.
7. The substance is non-toxic.
8. It may be used for the same purpose and under exactly the same conditions as the iodide of potassium and sodium.

THE RELATIONSHIP BETWEEN STAUUNG-HYPEREMIA AND OPSONIC INDEX.

BY JOHN C. HOLLISTER, M.D.,
Adjunct Surgeon, St. Luke's Hospital, Chicago.

If one ascertain the opsonic index of fluids obtained from chronically infected tissue areas he will find that this index is in the large majority of cases below that of the patient's general circulation. After the use of a Bier stauung-apparatus he will find the local index to have been raised toward, or quite to, that of the general circulation. This is probably one reason for the beneficial results following the use of such apparatus.

It is the purpose of this article to briefly review the causal factors that Bier himself calls attention to in explaining the effects of his methods of producing hyperemia, and then to give experimental data that will show the truth of the above statement.

Bier says hyperemia is of value because (1) it has a pain-quieting action; (2) it has a bactericidal or attenuating action; (3) it has a resorption action; (4) it has a "dissolving" action; and (5) it has a distinct nourishing action.

It is under the second heading that our experiments fall.

1. *As a Pain-quieting Agent.*—This is illustrated especially in cases of chronic rheumatism (by active hyperemia) and in gonorrheal arthritis (by passive hyperemia). The explanation is that active hyperemia carries away poisonous materials which act as irritants on the nerve endings, and passive hyperemia dilutes them.

Views of other investigators are given as follows:

Ritter says that hyperemia diminishes the sensibility of the nerves by causing an edema in the tissues, just as Schleich has found in his experiments.

Bum considered this effect of passive hyperemia to be due to the fact that more fluid was brought into the joint and prevented the rubbing together of inflamed surfaces.

Bier does not agree with the view that inflammatory hyperemia causes pain. He thinks the injuries to cells and nerve endings cause the pain, and the tendency of the hyperemia following is to lessen it.

2. *The Bacterial Destroying Action of Hyperemia.*—Nötyel's experiments on rabbits are noted. (Sixty-seven rabbits were injected by virulent toxic doses of anthrax and streptococcus in areas which were under the influence of strong hyperemia; only 16 died. Later the same animals were injected without the hyperemia, and all died.)

Laqueur found that the bactericidal strength of blood obtained from a finger after the application of a constricting band was considerably higher than before the hyperemia.

Wessely's experiments are especially interesting. This investigator (Bier says) found that after he had applied moist heat to a rabbit's eye the amount of albumen contained in the eye humor was much increased. He then argued that the antibodies in the blood could be increased in definite places by causing localized hyperemia; so he advised combining serum treatment with hyperemia. It is exactly along this line that our experiments with opsonins lie.

Bier himself found abundant pure cultures of staphylococci from large acute abscesses. He applied hyperemia, and after a short time found these abscesses sterile.

Buchner considered that with the congestion occurred an increased accumulation of leucocytes, which by secreting alexins in the serum aided in killing the infectious elements.

Heller considered that passive congestion "held back" the nitrogenous products of bacteria, and these caused destruction of the bacteria themselves.

Cornet added to Heller's view that these nitrogenous retained bodies also stimulated the tissues to new formation of connective tissue and scar formation, which encapsulated and made harmless the focus.

Richter considered the action of passive hyperemia nothing more than the establishment of a mild inflammation, and that the results depended upon the disturbances of circulation with resulting "randstellung" and emigration of leucocytes.

Hamburger's views were as follows: "By congestion the blood becomes richer in carbonic acid, and the bactericidal power of the blood is thus raised because the acid itself is bacteria-destroying; under its action the red cells swell, water is withdrawn from the serum, its concentration is increased, and finally the serum takes up the diffusible alkali. The latter occurs partly because with the added concentration of serum the percentage content of the alkali is increased, partly because from the influence of CO₂, alkalies leave the blood-corpuscle for the serum, and by breaking down the albuminates of the serum diffusible alkalies are set free." The influence of alkalies upon the antibacterial action of the blood fluids Bier says is well known. According to Von Behring the susceptibility of rats to anthrax is dependent upon the alkalinity of the blood.

Bier speaks of the increased local leucocytosis that has been found to be caused by passive congestion, and upon which Metchnikoff and his followers consider the bactericidal action of blood depends. Bier then says: "From what has been said it must be concluded that the passive congestion considered purely theoretical according to modern ideas and theories must be a justifiable and logical means of procedure against diseases which are caused by bacteria, since it stands opposed to none of these theories, but on the contrary is justified by them all." Bier says further that he considers Metchnikoff's phagocytic theory as the most important, and then goes on to say that he himself considers inflammation itself a *physiological process* and *beneficial*. It is nature's way of warding off

infection, and it is because hyperemia causes the increase of the different factors of the natural inflammatory processes that the good is accomplished. He considers that antiphlogistics really cause an accumulation of these natural processes of reactive inflammation and not a hindering of them. "There is to-day no better means of sustaining and strengthening the useful and curative inflammation in all its manifestations than the stauung-hyperemia which we are able to produce by the bandage and suction apparatus. For lasting results, *passive* hyperemia applies more particularly to acute bacterial diseases and the active hyperemia to chronic and non-bacterial diseases."

The importance of broadening and slowing the blood stream over the somewhat higher content of carbonic acid or nitrogen is emphasized. The former "bring the injured tissues into more intimate connection with the curative blood ingredients (serum, leucocytes, etc.) than is possible in the swift-moving arterial current."

3. *The Resorptive Action of Hyperemia.*—Bier calls attention to the fact that resorption really takes place by means of the blood-vessels and not by the lymphatics. This applies also to the digestive tract, where water, soluble salts and carbohydrates, peptones, and some unaltered proteid bodies almost entirely are absorbed by the blood. Resorption from the peritoneum is mainly through the blood-vessels and not through the lymphatics, as many have thought. The taking off of small bodily ingredients is accomplished by the latter. Many experiments are quoted to substantiate the above.

"We know little about the possibilities of influencing the lymph current artificially, but we can the blood current."

Klapp found resorption was markedly increased by active hyperemia, and although temporarily retarded by passive hyperemia the final result is actually one of stimulation, for when the bandage is removed resorption is so much increased that the total final effect is more than with-

out the use of the apparatus, unless this is kept on too long.

"Resorption is most retarded by anemia" (i.e., Esmarch's bandage). "The value of the passive congestion is therefore to delay the resorption of the toxins of localized infections until the living tissues can so act (we do not know how) on them and render them harmless."

4. *The Dissolving Action of Hyperemia.*

—Bier says this is shown by its action upon blood coagula or deposits in and about ankylosed joints. "If these are absorbed they must be first dissolved, and that hyperemia can accomplish this there is no doubt. In cases presenting visible nodes so treated the nodes are caused to disappear by both active and passive hyperemia." This action is compared with the tissue-dissolving action of inflammations, to which the terms "autodigestion" and "autolysis" are given, and also with the maceration and dissolving of the skin, over which is allowed to flow the aseptic alkaline fluid from an edematous extremity.

Billroth is quoted as saying that one of the actions of the living cells is in the fact that under certain conditions they cause connective tissue and fibrin fibers to be metamorphosed to a soft, jelly-like condition.

5. *The Nourishing Action of Hyperemia.*

—Bier claims he has no doubt about this action, but frankly admits that it is much harder to prove the exact underlying reasons here than those of the former factors. He writes further on the subject by asking the following two questions:

1. "Can we bring about a condition of overnourishment of our normal tissues by hyperemia; can we cause artificially larger bulk by influencing physiological growth?"

2. "Can we hasten or strengthen regeneration of tissue by hyperemia?"

In answer to the first question he says: "There are some cases in which a true muscle hypertrophy is due to a venous thrombosis, but after considering carefully the microscopic reports it cannot be definitely decided whether there is present an actual

hypertrophy or a first stage of degeneration of the muscle fibres." He has never seen a true muscle hypertrophy following a mild grade of stauung-hyperemia. Both forms of hyperemia do cause an active growth of superficial epithelium, as is the case in many instances of chronic hyperemia (hair also). "On the contrary, to my knowledge there is not a single instance known in which the secreting gland epithelium has been hypertrophied by hyperemia."

Chronic congestion can cause an increase in connective tissue (kidney, liver, spleen). Increase in length and breadth of bones also can be brought about by chronic hyperemia.

The influence of hyperemia on regeneration is illustrated by noting that a rapid change of soft tuberculous tissue to fine scar tissue is brought about under the influence of stauung-hyperemia, and Bier thinks the surrounding of an inflammatory focus by connective tissue scar formation plays a large part in the defenses against infection.

Bum found that the external callus about a fracture was markedly stimulated by stauung-hyperemia, and the internal callus somewhat less so.

Finally, Bier says: "While the actual influence of hyperemia upon the physiological

	DATE.	O. I. of exuding fluid be- fore Bier treat- ment.	O. I. of exud- ing fluid after Bier treat- ment.	O. I. general circula- tion.
Boy A. Tuberculous Sinus	Nov. 23 Dec. 4 Dec. 6 Dec. 10	0.3 0.6 0.8 0.7	0.7 1.2 1.0 1.2	0.8 1.4 1.6 0.9
Boy B. Tuberculous Fistula	Jan. 28	0.8	1.5	1.8
Boy W. Tuberculous Glands	Feb. 16 Feb. 20	0.4 0.4	1.4	1.5 1.8
Boy P. Tuberculous Fistula	Jan. 28 Apr. 2	1.0 0.9	1.8 1.1	1.9 1.0
Boy O. Tuberculous Fistula	Jan. 28 Apr. 2	1.0 0.5	1.2 0.9	1.0 1.1
Boy B. Tuberculous Fistula	Jan. 28 Apr. 2	1.3 0.6	1.5 1.0	1.3 0.8
Girl G. Tuberculous Fistula	Apr. 2	0.5	1.0	0.9

growth of an organ and upon the nourishment of a normal tissue is limited to superficial epithelium (not universally so) we cannot doubt that regeneration is considerably hastened by active and passive hyperemia. Functional hyperemia is active. The hyperemia which serves particularly for the building up of tissues is passive."

The statement made at the head of the article is based upon some experiments, the results of which were so uniform that the truth of the statement seems quite satisfactorily proved. Some exuding serum was collected from the open ends of chronic sinuses or fistulæ and its opsonic content noted. Then the cup was applied for the usual one-half or three-quarters hour intermittently, and finally some of the serum at that time

exuding was collected and its index estimated. It was found that without exception to begin with the patient had a higher opsonic content in the generally circulating fluids than in the locally diseased areas. Then it was found after the use of the apparatus that the opsonic content in the fluid without exception approached to or quite reached that of the general circulation.

The table is self-explanatory and hints at a very good reason why we should combine, in our therapy against bacterial diseases, the use of vaccines by which we can raise a low *general* opsonic index with the use of some such device as Bier advocates, and by which we can draw into the more indurated tissues these fluids with the higher opsonic content.

A CASE OF TUBERCULOUS ARTHRITIS OF THE KNEE, APPARENTLY MUCH AGGRAVATED BY BIER'S CONGESTION.

BY DR. J. J. A. VAN KAATHOVEN,

Assistant Instructor in Surgery, University of Pennsylvania.

This patient, a boy of nineteen, without suggestive family or medical history, entered Dr. Charles H. Frazier's service at the University Hospital September 17, 1906, complaining of pain, swelling, and impairment of function of the right knee. He gave a history of an attack diagnosed as "water on the knee" four years ago, apparently the result of frequent slight injuries. After three months of unsuccessful palliative treatment an attempt at aspiration was made, which proved unsatisfactory owing to the thickness of the exudate. By means of incision a thick yellow fluid was removed. Some stiffness resulted from this operation, but the patient was able to go about his business.

The winter previous to his admission the patient fell, bending his leg under him. The injury kept him from work for some time. In the spring of 1907 the joint became spontaneously sore, stiff, tender to a slight degree, and somewhat swollen, all symptoms being insidious in onset and very gradual as to progress.

On admission the physical examination

proved negative in all respects save in regard to the affected joint, which presented the signs of a low-grade inflammation with moderate effusion. Extension was applied, great comfort resulting. Two days later Bier's congestion treatment was instituted, the bandage being applied one hour daily. After two days of this treatment conditions became distinctly aggravated. There was very severe pain, greatly increased swelling, and considerable contraction of the muscles. The hyperemia treatment was discontinued and a cast was applied. Two days later the passive congestion treatment was again instituted. The patient was instructed to apply it himself, was discharged from the hospital, sent to the country, and advised as to hygiene and forced feeding.

After an interval of about two weeks the patient returned for treatment, with his knee in a worse condition, great muscular contraction and consequent fixation, tenderness, pain, swelling, and disability being present.

Extension was applied, giving great re-

lief as before, although the joint remained exquisitely tender on pressure or motion. After about three weeks of treatment by absolute rest, the knee remained much swollen and tender, showing distinct fluctuation. Aspiration was performed, and the joint irrigated with 1:100 iodine solution.

From this time on the joint improved somewhat, the temperature running to about 100° at night, the pulse from 100 to 120. A tuberculin test made at this time proved negative, the leucocyte count being 14,400. Examination of the aspirated fluid failed to show the presence of the tubercle bacillus.

The patient was discharged November 30, 1906, and sent to Atlantic City, where he remained until January 22, 1907. During his stay he gained some weight but developed a chronic laryngitis, which proved to be tuberculous in character, an evening temperature, and a pulse running about 120 to 130. An apical lesion was discovered at the same time. The knee was not improved, great fixation, distention, tenderness, fluctuation, and contraction being present.

Excision was decided upon and carried out the day following admission, and though severely shocked the patient made a good recovery. The wound healed gradually, but his general condition did not improve. After about five months of hospital treatment he was discharged suffering from his pulmonary and laryngeal tuberculosis, with a temperature fluctuating from 98° to 103°, and a pulse constantly above 120.

The pathological examination firmly established the diagnosis of tuberculous arthritis and osteitis, notwithstanding the leucocytosis and negative tuberculin test.

Some months after his discharge the patient succumbed to his pulmonary lesion.

If one may judge from the literature, the above case is extremely unusual if not unique. Careful search of reported cases failed to produce a single similar one.

In a recent article Bier draws the following conclusions: The only contraindications to the hyperemia treatment in tuberculous arthritis are amyloid changes, severe

pulmonary involvement, large joint abscesses, and marked malposition of the affected parts. He then reports a series of 17 cases of carpal tuberculosis with 15 cures, 13 tarsal cases with 8 cures, another tarsal series of 13 cases with 8 cures, and one case of shoulder tuberculosis with absolute functional recovery.

In 44 cases he operated but eight times, and 8 cases did not respond to treatment. Functional end results are excellent and permanent, as illustrated by two cured cases not treated for fourteen and fifteen years respectively. The author does not mention a single instance in which the treatment aggravated the lesion. In a long series of unselected cases, the wrist gave 88 per cent of cures, the elbow 72 per cent, the tarsus 61.5 per cent. In 5 cases of knee tuberculosis, 3 were cured, 2 with normal mobility. Bier distinctly states that the knee-joint is the least adapted to this form of treatment.

Hobs after testing 200 cases gives a favorable report of the results of this treatment, not stating any untoward effects. Luxemburg, after a series of 23 cases, arrives at the conclusion that Bier's treatment results in movable joints. He obtained complete cure in 7 cases, and great improvement in 8; the remaining 8 cases are not mentioned.

Gillman, Henle, and Mikulicz all claim good results from this treatment after a thorough trial; they do not report any unfavorable cases.

Edwin Beer reports a series of 4 tuberculous knees, all improved by the congestion treatment, though the lesions were far advanced.

In the above cited case, none of the contraindications as stated by Bier were present. It was an incipient case and seemed particularly suited to this form of treatment. The hyperemia was carefully and gradually induced, according to the rules laid down by the originator of the method.

The sudden alteration in the course of the disease, changing from the gradual, slowly progressive type of tuberculous

arthritis to the acute form, immediately after application of the Bier treatment, seems to establish the fact that the congestion greatly aggravated the condition. This position is furthermore strengthened by the subsequent increase of symptoms due to persistence in the treatment, notwithstanding the aid of hygienic and climatic advantages. It is reasonable to assume that in a case of tuberculous arthritis suddenly awakened from a quiescent to an acute

stage, the active hyperemia might readily disseminate the bacillus to other parts of the body and cause, as in this case, pulmonary or other forms of tuberculous affections.

This argues that though the Bier treatment is safe and beneficial in the vast majority of cases of tuberculous arthritis, the surgeon should guard his prognosis when passive hyperemia is instituted and watch his patient with the utmost care during the first applications of this treatment.

HYPEREMIA TREATMENT OF ACUTE AND CHRONIC SURGICAL AFFECTIONS.

BY MACY BROOKS, M.D.,

Chief of Out-patient Surgical Clinics of the University of Pennsylvania and Howard Hospitals; Assistant Genito-urinary Surgeon, Philadelphia Hospital.

Methods of producing hyperemia as proposed by Bier may be divided into two classes, the active and passive. The former is induced by such measures as massage, electricity, and especially by means of warm applications and heated air. The relief obtained from hyperemia in both its active and passive forms is one of the most striking features of the method. Bier mentions in particular the benefit obtained in gonorrheal rheumatism, and his claim in this respect I have frequently corroborated at the Philadelphia Hospital by relieving the exhausting pain of this affection in from twenty-four to forty-eight hours by the application of a constricting bandage used twice daily, for two hours at a time. Aside from the rapid relief of pain the convalescence was materially shortened.

The relief of pain as suggested by Ritter's experiments is probably due to a serum infiltration anesthesia. Bier believes the pain is relieved because its cause is combated by the hyperemia. Among the diseases which he states are benefited or cured by passive hyperemia are various forms of chronic arthritis, the acute varieties of joint inflammation, and phlegmonous processes. Neuralgia, on the other hand, seems to respond more readily to active measures.

The arrest of an infectious process after hyperemia and its rapid absorption can be

attributed to either the death of the bacteria or at least to their attenuation, so that they are less active. In animal experimentation inoculation followed by hyperemia resulted in a few deaths, the majority of the animals living, whilst control animals injected with the same bacteria in the same quantity, but not treated by hyperemia, all died. These experiments apparently show conclusively the protective action of hyperemic methods.

The serum obtained as a result of artificially produced edema in an infected member possesses some bactericidal property which reduces the virulence of the micro-organism, and this property is not observed in the serum of a non-inflammatory part. The bactericidal power has been attributed to the presence of leucocytes in great number, faulty metabolic changes, increased alkalinity of the serum, and various other factors. It can be conclusively stated, however, that whatever the active agent may be, hyperemia is certainly the factor which activates it and enables it to attack most quickly and satisfactorily the excitant of the inflammatory condition.

To successfully and scientifically use passive hyperemia its dangers should be fully understood. There can be no doubt that many ineffectual or disastrous results were due to faulty technique.

Abscess and pressure necrosis may result

from too firm application of the constricting band, due, as suggested by Lesser, to the area of lessened resistance caused by pressure, thus providing an area of lessened resistance for the infection. This complication may be guarded against by judgment in the application of the bandage, by changing its position, and by occasionally releasing the pressure.

Thrombophlebitis constitutes a distinct contraindication to both active hyperemia produced by heated air and passive congestion. Several cases are reported in which death was apparently hastened or induced by the use of this method.

As to the method of application, to produce passive hyperemia in an extremity, a Martin rubber bandage or a muslin bandage is employed, applied with sufficient firmness to compress the vein walls, while the arteries are either not affected or only to a slight extent. In using the muslin bandage four or five turns may be made; then the bandage is roped by twisting it several times during each turn. The amount of edema is dependent on the degree of pressure. The subcutaneous veins first swell. The skin gradually becomes dark-red, and in two or three hours it is universally blue-red and edema begins to appear, the pressure in this instance being slight. There should be felt a pleasant warmth over the part. Cold edema is to be avoided. After twenty hours the extremity constricted measures about 2 or 3 centimeters more than before the bandage was applied. When continuous pressure for a long period is applied, twenty hours or more, the position of the constricting bandage should be changed in order not to devitalize the underlying tissues. In case it is advisable to limit the congestion to the affected focus the distal portion of the extremity may be firmly bandaged, although this method has generally been dropped by Bier. If correctly applied pain or other uncomfortable sensation should not be experienced.

To produce congestion of the entire arm, a tubular bandage is placed around the shoulder, running from the axilla to the

point of the shoulder and held in place by a bandage round the neck. It should not be applied longer than twelve hours. Venous stasis of the head is easily produced by a bandage placed about the neck, sufficiently firm to produce cyanosis of the face, and in severe affections edema; it should not cause any severe discomfort.

The use of dry cups or suction apparatus to produce hyperemia is indicated in many portions of the body where the application of a bandage is obviously impossible. The suction is produced by means of an air pump, and numerous ingenious appliances are now devised for various portions of the body. The forms of apparatus employed by Bier are now being used in this country and can be easily secured from instrument-makers. Those of glass are most satisfactory because of their cheapness and ease of cleansing, and more particularly because the enclosed member can be closely inspected during treatment. The air is pumped out without producing pain, and the degree of hyperemia noticed through the glass, when sufficiently great, is maintained for several minutes, and then air is permitted to enter. This intermittent treatment, five-minute hyperemia and three minutes pause, may be continued for from thirty minutes to an hour.

Without going into detail concerning the use of these rather complicated apparatus, the question arises as to what results may be obtained by the practicing physician, what cases is he justified in treating, or must the method be relegated to hospital practice, where constant and careful watch can be kept on the patients?

For minor affections, such as furuncles, abscesses, and so forth, the suction cup composed of a bell glass and rubber bulb, an ordinary breast pump, or a test tube with the bottom broken out and a rubber ball fitted over the broken end for suction, may be used. In considerable experience with these minor affections I have found that great relief from pain is not only experienced but the disease is shortened, and the small incision to release pus as recommended by Bier has always been sufficient.

The intermittent treatment continued for thirty minutes to an hour daily, during the early stages of an infection, is usually sufficient. Abscesses and furuncles may be opened before fluctuation by small incisions. When the cup is first applied very dark blood is drawn out, then lighter blood, while later nothing but serum will be seen. On the following day the slough will be seen to be loosened, and it will usually be possible to withdraw it with a suction cup or to remove it with tissue forceps. The cavity then will be seen to be lined with healthy granulations. It should be syringed with hydrogen peroxide and bichloride and dressed with sterile gauze without drainage. If this treatment is followed out, pain will rarely be experienced after the first application. Healing will be rapid and disfigurement will be slight.

In cases of inveterate furunculosis which under older methods required from one to two weeks before healing was complete, passive hyperemia has often cured in from four to five days, and the patients themselves have recognized the benefits obtained by the method.

Equally gratifying have been the results obtained in cases of puerperal mastitis, the passive hyperemia being applied by means of a large suction jar attached to a vacuum pump. Again, the intermittent use of the congestion seems preferable, the breast being drawn into the jar with just sufficient force to cause a feeling of fullness. This method has been very satisfactory in these ordinarily most trying cases.

It is not necessary to make very large incisions to evacuate the pus, an important cosmetic point in this region. Not only are the large disfiguring scars avoided, but the period of treatment is remarkably lessened, healing being effected in one case in ten days from the time of onset. It would appear that the suction alone in emptying the loose mammary tissue of pus product plays an important part in cases of this character and would help to avoid the dangers of burrowing which so commonly happens in breast abscesses. An important point in treating breast abscesses by this method is

to puncture each focus where pus is suspected; the punctures need not be large, but they should give each abscess cavity, should they be multiple, access to the suction cup.

To recapitulate, the general rules governing the application of the Bier method are that the pressure should never cause pain, in fact it should alleviate it; swelling, cyanosis, and edema should be produced even up to the constricting point, the arterial pulsation not being interfered with; pus if present is evacuated, the bandage being applied as described; in severe cases continuous pressure is maintained for twenty hours, in others a daily compression of ten hours is indicated, the time gradually being reduced as the inflammatory condition subsides.

While these rules hold good for acute conditions, they are not applicable to tuberculous affections, in which hyperemia should be induced for a short time without producing edema. In tuberculous affections of the extremities and in tuberculous arthritis the constricting band is applied exactly as in the case of acute infections. It is allowed to remain from one to three hours, possibly two hours being the limit for its use by those who are not experienced in hyperemia. The constriction is sufficiently firm to produce hyperemia, but in no sense should an edema be produced. The adaptation of this method has obtained in Bier's experience most favorable results, his unfavorable cases being encountered more particularly in the early years of his practice when constriction was employed over long periods of time. This method applied daily is well adapted for dispensary practice, and in some cases intelligent patients have been able to apply the constriction themselves, although this is a privilege which should be used only with precaution.

My own experience in tuberculous infections has been limited to one intractable case of tuberculous synovitis, in which a return to the normal condition was accomplished; one case of persistent sinus of the hip following an operation for coxalgia, which closed after six weeks of daily interval cupping continued one hour at each

sitting; and several cases of cervical sinus following tuberculous adenitis which closed rapidly under the intermittent suction treatment. The gray, sluggish granulations have become red and healthy, and within a month or six weeks of daily treatment have healed firmly, though with all other methods of treatment they persistently refused to heal.

This paper is intended to call attention to the application of artificially induced hyperemia in general practice. Its use in severe affections, such as an extensive phlegmonous infection, an acute osteomyelitis or arthritis, should, as Bier advises, be permitted only after extensive experience. This can be gained alone through practice in the minor affections, in cases of chronic disease, and a most careful attention to technique. The treatment can, however, and should be used in the cases I have mentioned with perfect safety by the general practitioner.

Through observations made during a year's experience with this treatment, I believe it to be a very important adjunct to surgery which should not be neglected, because it requires time, trouble, and special apparatus, for it is the duty of the surgeon to earnestly strive to produce the best results in every case whether it be minor or major work.

For producing hyperemia by suction, as in abscesses and furuncles, I have the ordinary Davidson cup consisting of a glass bell with rubber bulb attached. Of these I have several sizes; they are kept in a tray containing a 1:2000 bichloride solution. When treating lesions of this character a cup whose margins will reach just beyond the indurated area is selected and is applied with sufficient force to draw the enclosed area about $\frac{1}{4}$ inch into the glass bell. It is a good plan to start with light suction and gradually increase it as the part becomes anesthetic. Should the cup slip the edge should be covered with unguent. petrolat. or olive oil. When these lesions are seen early, there simply being slight tenderness and induration, they may frequently be aborted by cupping for thirty minutes at

intervals, with five minutes suction and three minutes rest.

Should the lesion appear very hard, glossy, and the induration be quite marked, indicating that some breaking down of tissue has taken place, a quarter-inch incision should be made under ethyl chloride anesthesia, after which the cup is applied as before. In such cases the slough or core will usually be loose on the second day, and it may be drawn out by the cup or may be withdrawn with toothed forceps, leaving a cavity lined with healthy granulation tissue.

When fluctuation is present the treatment is the same. The pus is withdrawn by suction, not forced out by pressure.

At first pus and blood will be withdrawn, then dark blood, then bright-red blood, then blood-stained lymph, and finally pure lymph. When nothing but lymph is withdrawn the suction may be discontinued, the cavity syringed with peroxide and bichloride and a sterile gauze dressing applied without drainage. The treatment is repeated daily and may require from four to seven days, depending upon the severity of the lesion and the resistance of the patient. A slight cyanosis may persist for several weeks after healing, but this will disappear and the scar will not be noticeable.

The edema which follows cupping will be found to act almost like an infiltration anesthesia, and the lesion may often be probed or even incised with little or no pain. Ordinarily no pain is experienced after the first treatment.

In fractures where reduction is easily maintained, passive motions and massage started on the second day are found very beneficial, and this treatment may be aided by baking, after the acute congestion has subsided. When this method is carried out splints may be discarded early. For instance, a Colles fracture may be carried in a sling, splintless, after the fourth week, and after the fifth week the arm may be used.

Bier has lately reported some favorable results with passive congestion in cases of tuberculous testicle, but I have not yet had any experience with this treatment in these

cases. Here hyperemia should be produced, but edema should be avoided.

I have treated cases of acute synovitis of the knee-joint so painful that the foot could not be touched to the ground, and have had the patients stand up and limp out of the office unassisted, after thirty minutes hyperemia with a Martin bandage.

The treatment seems rational, as it is simply assisting nature to effect resolution and repair by increasing the means which she normally employs to accomplish this end.

In summing up the advantages of the Bier treatment I would say they are as follows:

Rapid relief of pain.

Small incisions.

Slight disfigurement in exposed parts.

Shortening of convalescence.

Less chance of metastasis from early opening.

The disadvantages are:

The length of time required in treatment.

Special apparatus.

Experience in severe cases.

A FATAL PRESCRIPTION OF ARSENIC AND STRYCHNINE.

The adage "History repeats itself" is abundantly illustrated in medicine. Cases, however extraordinary, can be paralleled if records be searched with sufficient diligence, and the minuteness with which details, often apparently insignificant, are reproduced is as curious as it is instructive. In diagnosis and treatment, too, errors which are remarkable because they are the result of peculiar circumstances which baffle even high skill are repeated again and again. Sometimes mistakes result from ignoring ordinary teaching, and are attended with disastrous results which do not prevent their repetition. Some eight years ago in an annotation the *Lancet* drew attention to the fatal consequences of prescribing together liquor strychninæ and liquor arsenicalis. Such a combination ought not to be dispensed, although the "Art of Dispensing" states that they are "sometimes prescribed together. The alkali of the latter precipitates the strychnine, so

that a shake-the-bottle label must be used." As the *Lancet* insisted, the risk is too great to countenance the dispensing of such a mixture. If it is desired to prescribe arsenic and strychnine together the use of liquor arsenici hydrochloricus would obviate all risks of precipitation. But the risk would remain of the dispenser substituting for this preparation liquor arsenicalis, either by mistake or intentionally if he had none of the acid solution. These remarks are made in connection with the following case:

A practitioner wrote a prescription containing "Liq. As." one ounce and "Liq. Strych." five drachms; water to six ounces. The dose was half a teaspoonful. It seems that prescriptions had frequently been made up for him in these terms without ill effects. However, in the end a patient who took the mixture was seized with fatal convulsions. The result was attributed to the dispenser having used the alkaline liquor arsenicalis instead of the acid liquor arsenici hydrochloricus, so that a sediment of strychnine formed.

In the *Edinburgh Medical Journal* for August Prof. H. Harvey Littlejohn and Mr. T. W. Drinkwater have reported another case of the same fatal mistake. A mixture containing equal parts of liquor arsenicalis and liquor strychninæ was prescribed for a woman, aged thirty-six years, who was suffering from pulmonary tuberculosis. Six drops were ordered to be taken three times a day in water. A druggist dispensed the prescription in an ounce bottle, which was taken without ill result. Then a second bottle was taken except a few drops containing a little sediment. At 10 A.M. one day the patient, finding the bottle almost empty, added to it some water, shook it up, and drank it. An hour later she complained of feeling ill and of not being able to walk. She lay down and had a convulsion. Her medical attendant was sent for and found her lying in bed with an anxious expression. She told him what she had taken and said she was afraid that "she had done for herself." The slightest touch caused a convulsive seizure. She died at 12.20 P.M.—*Lancet*, Oct. 26, 1907.

EDITORIAL.

THE DROP METHOD OF ADMINISTERING ETHER.

For many years we have been surprised that our English cousins should resort to the use of cumbersome and often complicated apparatus for the administration of those drugs which are employed to produce anesthesia by inhalation. We believe that it is always wise to use the simplest apparatus possible in the performance of any mechanical or other act requiring extraneous aid, and this rule certainly applies in regard to the administration of these pain-relieving agents. The ordinary folded napkin, or towel, or the exceedingly simple inhaler of Esmarch, is without doubt the best thing which can be used for the administration of chloroform. Recognizing the fact that far too much ether was administered to the vast majority of patients, Dr. Allis, of Philadelphia, many years ago invented what is known as "Allis's inhaler," which has been used very largely in this country because it provides the patient with a large amount of atmospheric air at the same time that it permits the anesthetist to administer adequate quantities of ether vapor, with the result that the old ether cone, made out of a towel and supported with felt or pasteboard in such a way as to make it impervious to air, has almost entirely disappeared from use; to such an extent that the modern trained nurse does not know how to make the ether cone which her predecessor so dexterously prepared twenty years ago.

More recently the so-called drop method of administering ether has come into vogue as surgeons and others have recognized, more and more clearly, the fact that most of the evil sequences to ether anesthesia are due to the fact that the patient has received an excessive quantity of ether vapor. Whenever this so-called drop method has been used, a remarkable diminution in evidences of pulmonary and renal irritation and gastric disorder has taken

place, so that with the best operators the drop method of using ether is now universally employed, with the result that the patient is no longer saturated with the drug and no longer exhales ether in his breath for several days after the operation is over. It is quite true that this method requires the employment of a greater quantity of ether than the older closed method, because the ether, being dropped upon a folded towel, as is chloroform, a considerable quantity escapes into the surrounding air. On the other hand, when it is remembered that ether vapor is heavier than the atmosphere it is also recalled that if the napkin, upon which the ether is dropped, is held immediately above the face of the reclining patient, the vapor of the ether passes to the nose and mouth in an invisible cloud in quite as great a concentration as is necessary, and, unless the ether is poured on the napkin very lavishly, but a comparatively small quantity is lost. Indeed, it is probable that with the old method, in which the ether was soused upon the cone, a greater quantity was used than by the more modern plan.

We note with pleasure that our English cousins are waking up to the importance of this method of using this valuable anesthetic which for so many years has been almost exclusively employed by American surgeons, at least those who live north of Mason and Dixon's line. Thus, Brownlee contributes a paper to the *British Medical Journal* of December 28, 1907, in which he points out the advantages of this method and quotes the statistics of Miss Alice Magaw, who has reported 14,000 cases of anesthesia by the drop method without a death directly due to the anesthetic. Brownlee, we think unfortunately, resorts to Schimmelbusch's mask, but the point of his paper is that he emphasizes the value of the drop method. He asserts that in strong or alcoholic men he has found some difficulty in inducing anesthesia by this plan, and so it

is his habit to begin with one part of chloroform and three parts of ether, and later to develop full surgical anesthesia with ether alone dropped, instead of poured, on the inhaler.

He reports a series of cases in which the patients varied from two years to seventy-three years of age. They belonged to all classes, including alcoholic men, neurotic women, and patients emaciated by malignant disease. The shortest administration lasted seven minutes, the longest three hours, and his experience has led him to greatly prefer this method to the cumbersome apparatus commonly employed in English hospitals. There is a great diminution in the manifestations of shock, the color remains good, post-anesthetic sickness is greatly lessened, and cyanosis is almost unknown, although this symptom is very common with closed inhalers. Another advantage is the fact that as a new napkin is employed each time no mechanical inhaler has to be disinfected.

In some remarks made by Mr. Thomas concerning this method, which he appends to Brownlee's paper, he asserts that he has found less capillary hemorrhage during operations, less sickness after operations, no bother with the anesthetic bag commonly employed in England, easier sterilization of the mask, if it is used, and far less anxiety to the surgeon if the anesthetist has not had large experience. Thomas reports one case in which the operation lasted two and a half hours. He removed three-quarters of the stomach, a large portion of the duodenum, the whole of the transverse colon with its mesentery and glands, occluded the ends of the duodenum and of the ascending and descending colon, and finally performed a gastrojejunostomy under difficulties, because the stump of the stomach could not be brought to the surface. He also performed an ileosigmoidostomy. Notwithstanding this fact he asserts that the patient had little shock, recovered, and was quite cheerful within six hours. Surely this is a victory for modern surgery and for modern anesthesia, not to speak of the victory for the operator himself.

THE NECESSITY OF REST AFTER AN ACUTE ILLNESS.

With the advances of bacteriology in its relation to the practice of medicine we learn more and more that many of the conditions of acute illness which we have been accustomed to consider as distinctly local in character are really dependent upon a general systemic infection, in which state all organs of the body suffer to some extent, although certain organs may bear the brunt of the disease, or at least present more sharply-defined symptoms than are found in other parts of the body. This important recognition of the fact that nearly all infection is a general condition, rather than a local one, emphasizes the necessity of the physician carefully investigating the state of each important organ of the body when prescribing for and giving advice to patients who are taken ill, or who are recovering from an acute illness. It no longer suffices to observe alone a diminution in the chief manifestations of a disease before giving a patient a clean bill of health. Such carelessness leads not rarely to prolonged ill health or even permanent invalidism. Thus the number of instances in which patients recover from an acute rheumatism only to become cardiac invalids is by no means small. Even in the case of such a disease as acute articular rheumatism, which is known to exercise a very deleterious influence upon the endocardium, physicians are prone to allow their patients to get up as soon as the joint manifestations are considerably modified. Such a mistaken method may not produce immediate evil effects because the heart muscle may be strong enough to compensate for the damage done to the valves, but ultimately the patient comes under medical observation a second time because he has symptoms of cardiac disability, and then it is recognized that the attack of acute articular rheumatism which occurred some years before is really the direct cause of the grave ill health which is present. It is our own custom to insist that patients who are suffering from acute articular rheumatism should remain at absolute rest for a period of not less than

three weeks after the joint symptoms are in abeyance, and this practice has been forced upon us, not only by personal experience which indicates that getting up at an earlier date is prone to result in disaster, but because every clinician continually sees instances of cardiac disease which have undoubtedly had their origin in a rheumatic endocarditis months before.

The necessity of carefully studying the condition of the heart is not limited, however, to that acute infectious disease known as articular rheumatism; it should be extended to every acute infectious disease, whether it be a prolonged illness, as is usually the case in typhoid infection, or whether it be in pneumonia or influenza. While it is true that in acute articular rheumatism the effects are chiefly exercised upon the endocardium, particularly that of the valves, in typhoid fever, pneumonia, and influenza the venom seems to be chiefly concerned with producing muscular degeneration or great feebleness, and so it not infrequently happens that the patient who gets up too early and thereby strains an enfeebled heart muscle suffers for months and years from cardiac feebleness with or without a certain amount of dilatation, and oftentimes dates his physical incapacity to the attack of influenza or typhoid fever which occurred a long time before. Pathologists have recognized these cardiac changes much more fully than have clinicians, and have repeatedly urged upon their active colleagues the necessity of considering secondary cardiovascular degeneration. Of course, the necessity of rest after one of the acute infections is far greater in the patient who already has some valvular lesion or tendency to cardiac feebleness than it is in the patient who starts out with a fairly strong cardiac mechanism.

In other words, this is an instance in which the physician is not concerned so much with the administration of drugs for the purpose of preventing or curing disease, but is relied upon by his patient for advice which will be effective in preventing subsequent ill health, and this advice the patient has a right to expect and to demand.

IS THE ABSORPTION OF BACTERIA FROM THE PERITONEAL CAVITY BY THE LYMPHATICS OR THE BLOOD-VESSELS?

A very considerable number of researches have been carried out within the last few years upon the rapidity with which bacteria are removed from the peritoneal cavity. Many of these seem to indicate that a large part of the absorption is carried on by the lymphatics, but Asher, Starling, and Mendel have proved that many soluble substances introduced into the peritoneal cavity are taken up by the blood-vessels. Wells and Johnstone have recently in the *Journal of Infectious Diseases* of November 15, 1907, raised the question as to whether it is true that bacteria leave the peritoneal cavity chiefly or solely by way of the lymphatics. Researches carried out by Clark some time since certainly seemed to indicate that this was the case, and many practitioners at the present time place their patients, after operations upon the organs of the abdominal cavity, in such a position as to favor lymphatic drainage. Wells and Johnstone point out that Buxton found that if large numbers of typhoid bacilli are injected into the peritoneal cavity of rabbits, these micro-organisms appear in the blood very quickly, the largest number being found from five to fifteen minutes after the inoculation, although at the end of thirty minutes they decreased rapidly, so that at the end of an hour few bacilli could be found in the blood, presumably because of the bacteriolytic influence of the serum. Buxton thought that this absorption took place through the lymphatics, and Wells and Johnstone seem to have proved pretty conclusively that when large numbers of bacilli are injected into the peritoneal cavity of rabbits they pass into the blood chiefly by way of the thoracic duct, although it is possible that some bacilli enter the blood by a more direct route. These investigators also believe that the absorption of soluble substances from the peritoneal cavity takes place by the blood-vessels chiefly, although they are also absorbed somewhat by the lymphatics. The

point is, however, that so far as bacterial absorption is concerned the lymphatics play the chief rôle.

THE CLINICAL SIGNIFICANCE OF McBURNÉY'S POINT.

As quoted by Sturmdorf in an article on appendicitis, published in the *New York Medical Journal* of December 21, 1889, McBurney wrote as follows: "...found in all my operations that it lay either thickened, shortened, or adherent very close to its attachment to the cecum.

"This, of course, must in the early stages of the disease determine the seat of greatest pain on pressure, and I believe that in *every case* the seat of greatest pain, determined by the *pressure of one finger*, has been *exactly* between an inch and a half and two inches from the anterior superior spinous process of the ilium on a straight line drawn from that process to the umbilicus.

"This may appear to be an affectation of accuracy, but as far as my experience goes, the observation is correct."

Sturmdorf concedes that McBurney's point marks an epoch and a phase in the evolution of our mastery over appendicitis; nevertheless, while it served to blaze the path through the mazes of earlier controversies, it has proved an equally potent factor in leading to error and fruitless mutilation, and though vested with almost pathognomonic dignity for almost two decades, it must be relegated to the humble rank of a possible contributory factor. He holds that appendicitis may exist in the absence of the McBurney point, and most important, that a typical McBurney point may be present in the absence of an appendiceal involvement. A frank appendicitis tends to substantiate McBurney's findings. There is, however, a group of appendiceal lesions, one rapidly fatal, the other with symptoms referred to the upper digestive tract, in which a McBurney point cannot be demonstrated at any stage of progress. There is a further heterogeneous group presenting a typical McBurney point with perfectly healthy appendix.

After a very brief résumé of the work

of Ross, MacKenzie, and Head, Sturmdorf states that these observers have established the fact that any given point of pain may be either a direct expression of a contiguous disturbance, or the transmitted manifestation of a distant lesion; or that an existing McBurney's point may represent the direct pain focus of a disturbance within its own area or the reflected pain focus of a distant lesion.

Head demonstrates his pain points by a gentle tactile exploration of the cutaneous surface carried out with a round pinhead employed in the manner customary in testing for analgesia, thus eliciting only superficial hyperalgesia. The McBurney method, however, elicits pain points both superficially and deeply placed, depending upon the degree of pressure exerted. The transmitted pain focus as elicited by Head's method is characterized by increased superficial reflexes, the deep apparently not being disturbed, and the simultaneous existence of concomitant pain points, radiating backward and upward toward the spine, most marked over the bony prominences encountered in tracing the course of the involved nerve trunks to their exit from the cord. The deep pain focus is, however, not necessarily attended by any hypersensitiveness of the skin, whilst the deep muscle reflexes are exaggerated, appearing often in the form of tonic contraction, and the concomitant pains if present radiate downward along the anterior crural nerves and the peritoneum, never upward and backward.

In the group of cases of acute inflammatory appendicitis unattended by perforation or gangrene, there will be no superficial area of hyperesthesia, but the typical McBurney deep pain point and the associated signs of a deep-seated inflammatory process are all present, and in addition Blumberg's sign, which Sturmdorf formulates as follows: When the appendicular inflammation is unaccompanied by peritonitis, the deep pain focus in McBurney's area alone is manifest. In beginning peritonitis, the recoil of the abdominal wall following the sudden withdrawal of the examining finger will prove more painful than the original digital pressure.

Sturmdorf's dictum that the rapidly fatal types of appendicular lesion presenting themselves clinically as unfocalizable forms of general sepsis, and also those cases which present but mild disturbances of the upper digestive tract, described by Ewald as "appendicitis larvata, or masked appendicitis," do not during any stage of their progress present any distinct focus of pain in McBurney's area will certainly not meet with general acceptance. Indeed, these cases so habitually present this one localizing symptom in the absence of nearly all other characteristics of appendicitis that it has been very justly relied upon when it is elicited after repeated examination as an indication for operation.

Sturmdorf classes in his third group acute and chronic disturbances of every degree, and many kinds linked by an existing McBurney's point over a normal appendix, and further states that "it is in this group that operative artefacts, resulting from clamp and ligature applied to an unoffending appendix, supply a pathological consolation for misdirected surgical effort, while the true source of the disturbance lurks somewhere between the thorax and perineum, anywhere but in the appendix." With this grimly humorous statement he will fail to find a general concurrence, though there lies within it a germ of truth. A typical and localized tenderness at the McBurney point on deep pressure elicited as a result of repeated examination is extremely rare in the absence of inflammatory lesion in this region. The futile operations performed because of the presence of localized tenderness in the right iliac fossa are usually to be attributed not to the true presence of a McBurney sign, but to unskilful, often rough examination, or the interpretation of the patient's psychological rather than physical condition. The general surgical conception of the McBurney point of tenderness is that it is elicited by deep and sharply localized pressure. The clinical significance of the importance of the superficial pain points has been accepted by comparatively few, though Sturmdorf's statement to the effect that the more superficial the pain focus the more certainty of

its indicating a distant lesion and a normal appendix seems to be well founded. That Sturmdorf's statements are worthy of careful consideration is suggested by the fact that his conclusions are based upon 208 cases observed in public and private service during a period of three years.

That this contribution will relegate the McBurney point to the humble rank of a possible contributory factor is to be doubted. It has never been regarded as in itself pathognomonic.

BACTERIAL INFECTIONS OF THE GENITO-URINARY TRACT IN CHILDHOOD.

It is commonly accepted as a fact that the kidneys can excrete organisms brought to them by the blood without in themselves suffering any harm. Indeed, some observers are inclined to regard the kidney as the main excreting agent of living germs. Sherrington has, however, been unable to verify experimentally this conception, since as the result of microorganism injections the excretion either did not occur or began some time after the injection and progressed slowly. It is inferred that the organisms escape only after some damage has been inflicted upon the renal secreting tissues. Even in the absence of albumen or blood he believes it unsafe to assume that the kidney has suffered no damage.

Box (*Lancet*, Jan. 11, 1908) in commenting upon this topic notes that the body can dispose of enormous numbers of bacilli without their appearing in the urine or other secretions. When they do appear the time of their appearance and the substances which appear with them lead to the presumption of renal damage. The quantities which appear in the urine are not in any way comparable to the quantities injected.

As to the clinical application of these facts, he notes that in cases of bacilluria the organisms appear in the urine, even when freshly voided, in enormous numbers, though it is quite the exception to obtain any definite evidence of renal damage in the form of casts or blood. Moreover, the bacilluria of typhoid fever, of scarlet fever, of measles, and of diphtheria has in many

cases been proved to be a colon bacilluria. From this he concludes that the common cause of bacilluria is due to an ascending infection, a suspicion which is corroborated by the sex incidence of the disease, for many more cases occur in females than in males. Moreover, the chronological order in which bladder and kidney suffer admits the same explanation.

Lenhartz as the result of his investigation of the incidence of pyelitis in the adult, found that 66 out of 80 cases were due to invasion by the bacillus coli communis, and that males were rarely infected. Much importance is attributed to the effect of pregnancy, parturition, and menstruation in preparing the soil. The colon bacillus, though it grows best in an alkaline medium, will also flourish in one which is either neutral or acid. It is often found in pure culture, nor does it decompose urea, hence is unattended by as deep and pronounced an inflammation as results from the presence of the bacteria which possess this power. Finally, because of its motility Box believes that even without urinary stagnation it may make its way from the urethra or bladder into the pelvis of the kidney.

As to the clinical manifestations in childhood, infection of the urinary passages may appear as pyelitis, cystitis, or incontinence of urine, without obtrusive evidence of local inflammation.

The possibility of pyelitis should always be suggested by the presence of fever, whether this be sudden, remittent, or relapsing in character, especially if this be associated with rigors and marked fluctuations of temperature. These feverish attacks may be so slight as to almost escape attention, or so severe as to stimulate the profound toxemia characteristic of typhoid or pneumonia. The kidney is often, but not always, tender. Pain, if present, is subcostal; the urine, at first scanty, becomes profuse. It may contain very little pus, but be persistently turbid from bacilli; it may show pus, blood, and casts. The infection often exhibits a remittent type without being associated with distinct enlargement. The diagnosis is based on the urinary finding.

Cystitis arises quite suddenly and often

without obvious cause. Frequency of urination is perhaps the commonest symptom and may be the only one. When the inflammation is more acute this frequency is attended by pain, by obvious pus, and even blood, and the urine is always turbid or opalescent. Nocturnal incontinence and tenderness over the bladder are noted at times. Distinction from pyelitis and cystitis must be based mainly on the presence in the latter case of painful micturition and tenderness over the pubis.

As to the symptom incontinence, bacilluria is the underlying condition of some of the most inveterate forms. The urine is usually faintly acid, leaves a trace of albumin, and on centrifugation shows a sediment made up of a few pus cells and bacilli. At times oxalate crystals are noted. In these cases nucleoproteid is found in the urine, which is supposed to be a sign of irritation of the urinary tract.

As to the prognosis of the cystitis of childhood, this must be guarded. The markedly acute cases very often clear up promptly. Those characterized by trifling local symptoms, exhibiting remissions and exacerbations, are likely to be extremely obstinate to treatment.

As to treatment, if the theory of ascending infection be correct the necessity for frequent bathing and absolute cleanliness of the urinary meatus is obvious. Moreover, prompt treatment of vulvitis is imperative. Box suggests that the milder cases of cystitis, pyelitis, and incontinence of urine should be treated by full doses of citrate of potassium combined with sedatives of the belladonna group. In severe cases of incontinence of urine, even though colon bacilluria is associated, the first care should be to determine the presence or absence of threadworms, the stools and urine both being examined for this purpose. Belladonna is most disappointing in inveterate cases, as are also urotropin, helmitol, hetraline, benzoate of ammonium, salicylate of sodium, and boric acid. The latter in particular is to be avoided since it absolutely destroys the appetite and produces nausea. With a view of testing the theory that the bacillary infection is hematogenous and perhaps due

to coprostasis, cases were treated for prolonged periods with calomel. No improvement could be ascertained. Salol was also inefficient. In one case the effect of anti-colon bacillus serum was most satisfactory. This patient was one with inveterate colon bacilluria and incontinence, which had resisted all treatment for twelve months. Three injections of 25 cubic centimeters stopped the incontinence, though the bacilluria persisted in some degree. The patient relapsed to the degree of one incontinence a week after discharge, but remains at the time of reporting much better than before treatment. Another patient treated by serum, both by subcutaneous injection and by the rectum, showed no improvement. A series of vaccinations also failed to give good results.

This contribution, even though it were to accomplish no other purpose, would serve a most useful end if it were to convince those who had little experience with urinary infections of the futility of persistence in a prolonged course of urinary antiseptics in the hope of curing a bacilluria and the

inflammation of the urinary tract incident thereto. It is probably true that a certain proportion of these cases are greatly benefited by a judicious choice of such antiseptics given in moderate doses, and cure following such a course of treatment is sometimes surprisingly prompt, though the *post* and *procter* are too often confused. Where, however, the effect of such treatment is not promptly beneficial the continuance of it is likely to be deleterious, since by producing kidney congestion the drugs favor the development of nephritis. It is probable that the best that can be done in inveterate cases of bacilluria is incident to observance of the rules of general hygiene, strict local cleanliness, and the free use of diluents, supplemented by most careful attention to the condition of the bowels, together with the moderate use of intestinal antiseptics and an occasional brief course of urinary antiseptics.

This contribution of Box's is also of importance since it calls attention to a cause of either continued or intermittent fever in children too often overlooked.

REPORTS ON THERAPEUTIC PROGRESS.

A REPUTED CURE FOR THE OPIUM HABIT.

The *British Medical Journal* of October 19, 1907, states editorially that in view of the fact that in the past various "cures" which have been put forward for dipsomania and other drug habits have proved on investigation to be devoid of the properties ascribed to them, and have survived chiefly in the form of fraudulent quack medicines, the attitude of the profession toward any new substance put forward as a cure for a drug habit must necessarily be one of reserve, and even skepticism. Nevertheless, the magnitude of the boon which would be conferred by a drug that would really benefit the victims of morphine, alcohol, etc., and the wide extent to which the habits prevail, are sufficient to insure attention to any new substance for

which the claim is made; and if its credentials appear satisfactory after a preliminary investigation a full and fair trial is certain to be accorded to it. During recent months sundry reports have reached us about the marvelous efficacy of a new antiopium drug which is being used in the Malay Peninsula; and as the drug appears to have now obtained a footing here also, it may be of service to summarize the chief facts which are known concerning it.

The plant yielding the drug in question is *Combretum sundaicum*, a woody climbing plant abundant in the plains and jungle around the town of Kwala Lampur, in Selangor. More than one version has been given of the accidental discovery of the virtues of the drug: according to the account given to Mr. L. Wray, Director of Museums, Federated Malay States, a party of

Chinese woodcutters, working in the jungle, ran out of tea, and tried the leaves of this plant as a substitute; an infusion of the raw leaves produced bowel complaint, but if the leaves were first roasted a fair substitute for tea was obtained which had no ill effects. Opium drugs, or the refuse opium after being smoked, was then added to the beverage, and the men continued drinking this in place of tea for a week or more. After that time it was found that all desire for opium smoking had been lost. On the other hand, Mr. J. G. Alexander, the honorary secretary of the Society for Suppression of the Opium Trade, was told in Kwala Lampur that the plant was brought home by mistake by a collector of medicinal plants, who prepared an infusion of the leaves and tried it on himself and a friend; the latter, an opium-smoker, found that the beverage took away his desire for opium. Nothing is said in this version about previous roasting of the leaves, or of the addition of opium dross to the infusion.

Whichever version may be correct, further trials of the drug were made, and the results led to the formation of the Selangor Anti-Opium Society, which began work on November 3, 1906, preparing the medicine and distributing it gratis to those who applied for it. The number of applicants was 6130 in the first three weeks. Branches were started in other towns, and the work was also taken up by members of the Methodist Episcopal Mission, which supplied the medicine to many thousands of people. It appears from Mr. Wray's paper that from November 16 to 23 about 396 patients had reported that they were completely cured of the habit; no records were kept before the first date mentioned. Mr. Alexander, writing about the work of the Methodist Mission, said last year: "I have not heard of any relapses as yet, although the cure has been going on for more than a month, the numbers who come having rapidly increased within the past fortnight." Mr. Wray also points to the interesting fact that the official opium return for the State of Selangor shows the consumption during

November to have fallen below the average for the previous five months by no less than 38 chests, or 25.5 per cent, without any variation in industrial conditions to account for it. In December, however, the consumption was 16 chests above that for November, which he thinks was probably due to the return of a certain number of the patients to their opium pipes.

The method of preparation and administration which appears to be invariably adopted is as follows: The branches and leaves are the parts of the plant used. The latter are separated from the woody portions, which are cut into thin slices and short lengths. Leaves and stem are roasted separately on an iron plate over a charcoal fire and then mixed together, the reason for separating being that the leaves would be charred by the amount of heating necessary for the wood. A decoction is then prepared by boiling from 8 to 11 ounces of the roasted drug in 4 gallons of water for three hours in a loosely-covered vessel and straining, at first roughly and then through a white cloth. Each patient is supplied with two bottles of the decoction, usually holding about 25 ounces each; into one he puts a quantity of burnt opium equal to the amount of his usual daily allowance, and none into the other. A dose of about 1½ ounces is taken from the first bottle as many times a day as the patient has been in the habit of smoking, usually three or four times. Each time a dose is taken the bottle is filled up from the second until the latter is emptied, when the patient continues taking the mixture that remains, without further alteration of its composition. Thus the patient begins with a dose of opium of only about one-sixteenth, or a daily dose of from one-sixth to one-fourth of his usual daily amount, and instead of smoking it he takes an aqueous extract of the residue left after roasting it in the same way as for smoking; with each dose he takes a quantity of the decoction of combretum, and the amount of opium progressively diminishes to the seventeenth dose, when it is approximately only one-third of that in the first dose; it then remains con-

stant to the last, or thirty-second dose. It is stated that in the majority of cases the cure is then effected; if it is not complete, the patient obtains a second supply of the medicine, into which is put only half the amount of burnt opium that was added to the first. As, however, the dose has been already reduced to one-third, it appears an irrational proceeding to increase it again to a half prior to a further reduction. In some cases a third bottle is necessary. When once the point is reached at which the patient can do without opium, further use of the combretum is not considered to be necessary; the "cure" is thus not a mere substitution of one drug habit for another.

Assuming that many, if not all, of the reported cures achieved by the treatment just described are genuine, it is important to ascertain which of the contributory factors are essential. Mr. Wray observes that whether the active ingredient is the antiopium plant or the burnt opium administered internally in gradually decreasing doses is a subject worthy of investigation. The latter is possibly the true cause, and the antiopium plant may only act as an astringent, preventing the distressing intestinal troubles which usually supervene on a stoppage of a customary supply of opium. The amount and nature of the alkaloids present in burnt opium is also a promising field of inquiry. The charred state of the antiopium drug, which was in use up to quite recently, suggests that any alkaloidal principle which it might possess had been destroyed in the process of roasting, or rather charring, to which it had been subjected. The drug is now more lightly roasted than formerly. A preliminary examination of the drug made in the laboratory of the Pharmaceutical Society in London showed the presence of some substance of the tannin group, but not of an alkaloid; and in the annual report of the Department of Agriculture of the Federated Malay States the government chemist reports that a preliminary investigation had not shown the presence of any alkaloidal, glucosidal, or other bitter principle, the organic matter consisting principally of tannin.

We understand that chemical investigation of the constituents of combretum is being continued in England, and that pharmacological tests are also being carried out with preparations made from it. Until the results of these tests are published there will naturally be reluctance to depart from the methods of administration hitherto employed, but it is clear that these leave a good deal to be desired. The author has referred to the irregularities involved in the method of reducing the dose of opium. The reports from Malaya also state that the decoction is very subject to fermentative and other changes, so that it often becomes putrescent, and has to be thrown away before the end of a course. No doubt British pharmacists will be able to prepare a product free from such objections while attaining the virtues, whatever they may be, of the cruder preparation.

NOTES ON THE CAUSES AND TREATMENT OF COLLAPSE IN MALIGNANT AGUE.

In the *Journal of the Royal Army Medical Corps* for October, 1907, CATHCART writes on this topic. He points out that the proximal cause of this collapse is obvious in many cases—i.e., the abstraction of a large quantity of the watery constituents of the blood by vomiting and diarrhea. The actual nature and origin of this copious blood-stained vomiting and diarrhea seem to be a trifle obscure—i.e., whether the blood-staining of the ejecta is due entirely to an actual infarction of the terminal vessels of the stomach and intestinal wall by sporulating parasites. Large numbers of parasites have certainly been found in the villi of the stomach and intestines, according to Stephens and Christopher. On the other hand, it seems probable that, in some cases, the blood-staining element in the ejecta might be due to extensive submucous hemorrhages, occurring as local manifestations of profound toxemia, on a par with the occurrence of petechiæ on the body surface. A series of post-mortems, with stained sections of the stomach and intes-

tines, would clear this point, but up to the date of writing opportunity for these has not occurred.

As regards the actual immediate treatment of this condition, there remains very little new to be said. In the milder cases a medium dose of morphine ($\frac{1}{4}$ grain hypodermically), with external warmth in the form of hot-water bottles and blankets, is indicated. This is combined with treatment of the predominating symptoms. In the dysenteric type a starch and opium enema should be given, with the buttocks well elevated. If vomiting is copious and persistent, ice pills are given, and all nourishment stopped by the mouth for twelve hours. In either variety a full dose of quinine (bihydrochlorate, grains x) is given intramuscularly, and repeated each morning for three successive days. Weekly injections are, as a rule, sufficient after this. In the more severe cases more active treatment is to be employed. In these cases the peripheral circulation (having almost failed) can no longer be trusted as a drug carrier, and on this account hypodermic injections of any kind are likely to prove useless. Venous transfusion of two to three pints of saline fluid is performed, and the quinine solution may either be added to the saline injection, or injected separately by Bacelli's method into the median basilic of the other arm; grs. xv of the bihydrochlorate (intravenous) is a suitable dose for such cases.

Under this treatment the pulse as a rule improves rapidly, but this improvement may be only temporary, and may then be followed in twenty minutes to half an hour by a state of collapse as complete as before. It is safer on this account, therefore, to supplement the venous transfusion by injecting the axilla with a quart of saline, this being more gradually absorbed by the reestablished peripheral circulation. This process is too familiar to need more than a word of description. A special trocar and cannula has been devised for the sake of convenience, but an ordinary exploring needle with the transfusion tubing attached answers the purpose admirably. A fold in

the anterior axillary wall is picked up, and the needle driven in to the extent of $1\frac{1}{2}$ inches. The transfusion bell-jar can then be fixed to the wall above the patient's bed, and after the injection the needle or cannula may be left *in situ*, should the patient's condition render a second injection of probable necessity. This method has the double advantage of expedition and slow absorption, but is necessarily only of value when the peripheral circulation is sufficiently active to absorb the injection, and on this account can never altogether replace venous transfusion. It would appear that transfusion in these cases performs a dual service in combating the actual collapse and by diminishing the profound toxemia. A simple and rapid method of performing the operation is to attach a fine-caliber tube to a hypodermic needle, and then run the saline fluid directly into the vein without any preliminary dissection. The collapse of the vein wall may render this difficult, but with adequate constriction above the elbow the vein can generally be sufficiently dilated for the purpose.

THE OPSONIC INDEX AS A GUIDE TO REGULATE THE USE OF VACCINES IN THE TREATMENT OF DISEASE.

PARK and BIGGS, in the *Journal of Medical Research* for October, 1907, in a useful paper on this subject state that the number of cases treated with vaccines by the authors has been comparatively few. They began with the treatment of twelve cases of tuberculosis, of which half were tuberculosis of glands or joints and half were incipient lung cases. The opsonic index responded so irregularly to the injections that they were unable to derive help from it in treatment, and after four weeks they discontinued taking the index, but continued the vaccine treatment according to the system in use at Saranac Lake and elsewhere.

Nine staphylococcus infections were treated with vaccine, and apparently with benefit. In three of the nine, before inoculations were begun, the index was above the normal, in the others it was slightly or

considerably below normal. After injection the opsonic power of the blood always rose above the normal, but sometimes only for a few hours. When the index was taken every day it was so variable as to be of little help, and now they treat the cases without taking the index.

A number of cases of furunculosis came to their attention, during the time when the others were being treated, who refused to be injected. These all made good recoveries, but none of these cases were as severe as several of those receiving inoculation. Their belief is that the vaccines aided in the recoveries of those inoculated.

A number of mixed infections of the sinuses of the head were treated. In these cases great care was taken to thoroughly cleanse the cavities before taking the cultures. Although at first some of these cases seemed to be improved by giving vaccines prepared from their own cultures, yet in the end only one out of eight showed definite improvement, and the vaccine injections were replaced by operation, and the usual treatment.

A number of cases of vaginitis in children, due to gonococci, were inoculated with the gonococcus vaccine. For every case so treated a control was cared for in the ordinary way, and there was no marked difference in the behavior of the two series of cases.

Two cases having chronic sinuses leading to diseased bone were treated by the vaccines without benefit. Both were infected with more than one organism. In one of these there were three different organisms; five of these, which were unidentified bacilli, had remarkable indices, one averaging about six and the other above three during several weeks in which the tests were made.

Three cases of acne were treated. Two of these were quite severe and were apparently markedly benefited. They had previously been resistant to the ordinary treatment.

The few cases which the writers have studied have impressed upon them the opinion that while the vaccines have a re-

stricted field in therapeutics, it is greater than they believed possible before the reports of Wright were published.

Those which appeared to receive the greatest benefit were localized infections of the subcutaneous or deeper tissues. Inflammations of the mucous membranes and generalized infections were not benefited.

The opsonic index did not seem to the authors to be an adequate guide to regulate the use of vaccines. Their experience in the vaccine treatment is, however, so limited, when compared to that of Wright and his followers, that they feel they are hardly justified in making conclusions even as definite as the above.

LUMBAR ANESTHESIA.

Despite the considerable proportions already assumed by the literature of lumbar anesthesia, despite, too, the fact that some authors speak from an experience of more than a thousand cases, there is still great diversity of opinion as to the selection of suitable cases, as to the choice of a drug, and as to the manner in which the desired, as well as the unexpected, results are produced.

Even with regard to technique, while there is pretty general agreement as to the choice of midline for the puncture, and no very bitter quarrel as to which interlumbal space should be selected, it is by no means settled whether or not cerebrospinal fluid should be drawn off before injecting the drug, and whether the drug should be dissolved in the abstracted fluid or in some other medium. Since exactly contrary opinions are expressed with quite equal certainty, it may be assumed for the present that the point is immaterial.

Of the drugs that now hold the field—stovaine, novocain, alpin, and tropacocaine—the most recent publications indicate a growing preference for the last named as the most reliable and the least dangerous. It seems probable, however, that further experience will show, not that any one of them is immeasurably superior to all others, but that certain qualities of each may be

found of advantage for special details of requirements; thus, the necessity for complete relaxation of the muscles in setting or wiring a fracture might outweigh the disadvantage accruing from a greater liability to undesirable sequelæ in the use of a certain drug.

Most advocates for the spinal route in anesthesia agree that alcoholism, diabetes, severe cardiac and pulmonary lesions, and perhaps arteriosclerosis, constitute direct indications; severe scoliosis is admitted as a contraindication even by those who have adopted the method as a routine; early childhood and hysteria are accepted by most as unsuitable; beyond this narrow ring, however, wide divergences are found.

Mohrmann asserts in emphatic terms that suppurative processes are an absolute bar. He, like Sonnenburg, has had an unhappy experience in a case of osteomyelitis, where a fatal meningitis ensued in circumstances leaving no reason to doubt that the thecal affection was metastatic, and not conveyed mechanically by the puncturing needle. Dean, on the other hand, considers lumbar analgesia strongly indicated in all acute inflammatory processes within the peritoneum, because in his experience shock is diminished to a remarkable degree, and he has never had reason to regret its use. It is true that a case of appendix abscess is not strictly comparable with one of osteomyelitis, and therein lies the weakness of both positions; it is hardly justifiable to argue from a few cases of bone suppuration that lumbar anesthesia is negated in all suppurative processes, but neither must it be lost sight of that by preferring spinal to inhalation narcosis, desirable as it may be to avoid shock, one may be exposing a patient with some forms of intra-abdominal suppuration to a risk which altogether outweighs that gain.

The undesirable "by-effects" and after-effects of lumbar injection are very numerous, but for the most part they are not more severe than those which may accompany the exhibition of chloroform, ether, or other drugs, such as the various antitoxic serums. Some are almost certainly due to errors of

technique, and will be eliminated; others are strictly "accidental;" but there remain some to be reckoned with very seriously. One of the most serious is paralysis of the ocular muscles, chiefly of the external rectus, but also of the superior oblique, and occasionally of those supplied by the third nerve. Mohrmann makes much of the fact that ocular palsies have been observed after the use of both stovaine and novocain, drugs which, apart from their anesthetic properties, are widely different in all other respects; further, he points out that in many of the cases in which this phenomenon has occurred the analgesia has not been produced, or has only partially developed, or appeared very late. On these grounds he explains the paralysis as resulting from a too rapid diffusion of the drug permitted by the use of adrenal extract (or its synthetic equivalent) that has undergone chemical decomposition as the result either of mere keeping or of too prolonged or too frequent sterilization. A difficulty in accepting this explanation arises from the fact that similar paralyses have been observed after the use of these drugs without any admixture with a suprarenal derivative. Ach lays stress on the selection of those nerves which run a long course through the meningeal spaces and might therefore be supposed to offer a maximum surface to the action of the medicament. He recalls the case of postdiphtherial palsy to explain both the selection of particular nerves and the "postponement" of the symptoms. If the length of the nerve trunk exposed to the action of the drug had any great influence on the nature and degree of the loss of function induced, it might be expected that some relation would be noticeable between the depth of anesthesia of areas supplied by individual trunks of the cauda equina and the length of their intrathecal course. Beyond the observation by Mr. Barker that in a few instances the anesthesia has been patchy in distribution, there is nothing to suggest either inequality in depth or loss of sensation in areas corresponding to peripheral distribution of nerves, or, apart from the definition of the upper

limit of the analgesia, that the distribution is segmental. Various observers have noted in their experiments on animals that changes of a temporary character are to be found in the nerve cells of the cord and medullary ganglia as a consequence of the injection of stovaine. They are of the nature of swelling with vacuolation and displacement of the nucleus and some slight staining abnormalities. It has been suggested, too, that the ocular palsies may be due to nuclear hemorrhages, but the evidence is clinical rather than that of post-mortem observation. There is, on the other hand, experimental evidence to show that the drug undergoes some kind of chemical fixation in the substance of the nerve trunks.

If the elucidation of the ocular sequelæ is still to seek, the explanation of the severe headache, which is the most constant of the after-effects, is only furthered to the extent of discrediting the original idea of a mild or "aseptic" meningitis. Most authors are content to ascribe it to a capricious toxic effect; some prefer to attribute it to alterations in the cerebrospinal pressure, whether due to the direct abstraction of fluid, or to the injection of extra fluid, or indirectly to an increased outpouring determined by mechanical interference or by chemicophysical disturbance. It is not impossible that the cause is to be sought in a derangement of renal function, for Schwartz has found by careful investigation of the urine of patients with previously healthy kidneys, who had had injections of stovaine, evidence of nephritis in 78 per cent of the cases. The average duration of the nephritis was only six and a half days, and the maximum a month; in no case did there appear to be any permanent damage to the kidney. But if his observations be confirmed, they will go far to compel the inclusion of kidney mischief in the list of absolute contraindications.

The very important paper by Mr. Barker on the conditions influencing the range of effective action of a drug injected into the lumbar thecal sac, published in the *British Medical Journal* last March, has not, ap-

parently, obtained the attention it deserved. His tests for isotonicity were perhaps open to some question, but his experimental observations upon the behavior of fluids of different densities, when injected into the cerebrospinal fluid, were not only ingeniously devised, but were also rich in the most suggestive results—results, moreover, which enabled him to present a record of the later series of his cases singularly free from blemishes.

It is a hopeful sign that most workers have experienced considerable improvement in the results of their later cases, and there is every reason to anticipate a speedy attainment of that accurate knowledge of the possibilities and the limitations of a method of inducing anesthesia that bids fair to find an established place in every-day usage.—*British Medical Journal*, Oct. 12, 1907.

PERNICIOUS ANEMIA AND ALLIED CONDITIONS.

As the result of a further careful study of this disease HUNTER reaches the following conclusions in the *British Medical Journal* of November, 1907:

The views of the writer as to the infective nature of this disease, and the part played by sepsis in connection with it, have suggested new lines of treatment with regard both to its prevention and possibly even to its permanent arrest.

The course of the disease is marked not only by slight variations from time to time, but usually by one or more periods of distinct improvement, lasting sometimes many months, in some cases even a year or two—sometimes occurring independently of treatment, but without doubt greatly due to the beneficial effect of arsenic.

The special feature of this anemia, however, is its great tendency to relapse, inexplicable on the view held by many that it can be produced by the ordinary causes of anemia, if only severe enough. For these relapses occur without sufficient cause to account for them, sometimes indeed after the slight causes alleged to have produced it in the first instance have been removed.

This tendency to relapse is, according to the present writer's observations, in reality due to the remarkable persistence of the specific hemolytic infection underlying the disease, since it is always accompanied by a recrudescence of the lesions in the tongue, stomach, or intestine, and by the glossitic, gastric, or intestinal symptoms connected therewith.

The great liability to relapse may, however, be due to the fact that—the important part played by oral, gastric, and intestinal sepsis not having been recognized—the patient has hitherto been left, not only with his specific hemolytic infection, but also with the local sepsis, which originally facilitated the contraction of this infection, and which favors its continued persistence. When he first drew attention to this matter in 1900, the writer expressed the hope that this had been the case. His subsequent experience satisfies him that it has been, and that the prognosis of this disease can be materially affected by a line of treatment he then recommended, based upon the above considerations. This line of treatment aims at:

1. The complete removal by local antiseptic measures in the case of the mouth, and by use of internal antiseptics in the case of the stomach and intestine, of the oral, gastric, and intestinal sepsis associated with the disease.

2. Special local antiseptic treatment of the infective glossitis present, supplemented by measures for raising the antitoxic power of the blood by a serum treatment, as he suggested in 1900.

THE TREATMENT OF BLACKWATER FEVER.

In an exhaustive article in the *British Medical Journal* of November 9, 1907, PROUT deals with the causes and treatment of this state. In connection with its treatment he reminds us that we have two factors to deal with: first, a loss of blood which in some cases is enormous, and secondly, the presence of a foreign substance dissolved in the plasma; and our

endeavors must be directed toward assisting nature to eliminate these products and toward keeping the patient alive until this is done and until the loss of blood is compensated for. Many drugs have been vaunted; one man pins his faith to chloroform, another to boracic acid, a third to tannic acid, a fourth to salicylate of soda, and another cracks up Cassia O'Beariana. The author has tried them all, but in his experience just as many cases get well without them as with them. As he before stated, the time for specific treatment is past. Bearing this in mind, the indications for treatment are obvious, but unfortunately there are, owing to the nature of the symptoms, often great difficulties in carrying them out.

The first indication is to get rid of the morbid products by means of the various excretory organs of the body. Nature is already doing its best in this direction. The kidneys are excreting the hemoglobin as fast as they can, and are being subjected to a severe strain in the effort; the liver cells are dealing with the dissolved hemoglobin, as may be seen in the hepatic cells loaded with yellow pigment; the stomach is endeavoring to get rid of the products of the excessive action of the liver; and the sweat glands are also assisting in getting rid of the poison. But these very endeavors tend to make our task more difficult, for the vomiting is so excessive that it becomes itself a morbid process, and closes up to us the principal channel by which food and remedies can be given.

The first step which the author invariably takes is to see that the intestinal canal is thoroughly emptied. Of all purgatives, the one which experience has shown to yield most benefit is calomel, and it should be freely given, 5 to 10 grains, preferably the latter, at the commencement of an attack. He considers that this should be done as a matter of routine in all cases, whether constipation is present or not, and almost invariably a large quantity of black, foul-smelling feces will be got rid of. It relieves the liver, and no doubt has a certain antiseptic action on the intestinal canal. If

given with a very little water it will be retained, or, at any rate, a sufficient quantity to have some action on the liver. Should the bowels not act freely within a short time it is as well to give an effervescent saline, and if this is vomited, to have recourse to a large enema of soap and water with a little castor oil.

Our next endeavor must be to aid elimination by the skin and kidneys, and we must pay special attention to the tendency on the part of the latter to give way under the strain to which they are subjected, and must endeavor to prevent suppression taking place. It is here that we find our greatest difficulty. How are we to administer diaphoretics and diuretics with the stomach in such an irritable state that every teaspoonful of water is brought up? In the milder cases, in which this irritability does not exist, nothing can be better than the simple old diaphoretic mixture of liquor ammonii acetatis and spiritus ætheris nitrosi, with the addition of acetate or nitrate of potash. It appears to be sound treatment to endeavor to render the blood as alkaline as possible, and thus dissolve the large quantities of black pigment with which the different organs are loaded. But in severe cases, in which vomiting is constant, the stomach must be left entirely alone, and the sooner efforts to introduce food and drugs by the stomach are given up the better it will be for the patient. In such cases the author begins the day by administering every morning a very large enema of warm water, generally with a certain amount of sodium chloride in it, so as to form a normal saline solution. The quantity must be large, as large as the patient can contain without distress—quarts, if possible; and if it is injected slowly and high up with a long, soft rectal tube, it is astonishing how large an amount can be given. A good deal of this is soon ejected, but there is no doubt that a considerable amount is absorbed. It acts beneficially in two ways: first, it washes out the lower part of the intestinal canal, and thus prepares the way for the nutrient and medicinal enemata of which the writer

speaks shortly; and secondly, that portion which is absorbed acts as a diuretic by adding fluid to the blood. This is a very important item in the treatment when no fluid is being given by the mouth, and the large enema may be repeated during the day. Diuresis may also be assisted by adding digitalis to the nutrient enemata and by the rectal administration of alcohol. A large sinapism to the loins is of service in lessening the congestion of the kidneys. In one case the writer used dry cupping with benefit.

It is recommended that normal saline solution should be slowly introduced into the connective tissue of the thigh or abdomen; but it is a very slow process to get any quantity of fluid absorbed in this way. It has no advantage, so far as the author can see, over the method given below, namely, intravenous injection of normal saline solution. He has now used this in several cases. In the first the patient was moribund, and while the injection had an extraordinary stimulating effect, it was only temporary, and he died a few hours afterward. In the other cases the operation was done earlier and recovery took place.

In all cases of severe hemoglobinuria the volume of the blood is much diminished, and the addition of one to two pints of normal saline solution to the blood not only acts directly by stimulating the heart, but, by increasing the blood-pressure, tends to produce diuresis. The author believes that in many cases of hemoglobinuria the suppression of urine is not only due to the mechanical blocking of the renal tubes and to the secretory powers of the renal epithelium becoming exhausted, but to this diminution in the actual volume of the blood. In all cases, then, where there is intense gastric irritability, a failing pulse, great restlessness, and diminishing urine, do not hesitate to give an intravenous injection. The effect on the patient is immediate; his pulse improves, he gets brighter and more talkative, and in an hour or two there is an increased secretion of urine. The process is a simple one, but the author

describes it briefly for the benefit of those who may be isolated in the "bush."

He uses a glass reservoir, which is carefully sterilized and filled with normal saline solution at a temperature of about 100° F. The most convenient way to prepare the solution is to dissolve a drachm of sodium chloride in a pint of boiled water. There should be a stop-cock or a clip (bulldog forceps will do very well) in the course of the tube, at the end of which a small cannula with a rounded end should be carefully tied. In the absence of a special cannula the author used one out of an aspirator case. One of the large veins at the bend of the elbow is selected, the skin carefully cleansed, and the vein dissected out. A ligature is passed under the vein and tied, the vein is opened above this, and the cannula inserted. Another ligature is then tied round the vein and cannula, and the saline solution allowed to enter the circulation. When sufficient has been injected the cannula is withdrawn, the second ligature is drawn tight, and the operation is complete. As a rule a pint will be sufficient, but the pulse must be watched, and more can be injected if necessary. Chloroform is not required, as in bad cases the senses are blunted and there is little pain.

So far as excretion by the skin is concerned, the author does not advocate giving hypodermically or otherwise pilocarpine, phenacetine, or similar drugs. They have a somewhat depressing action, and it will be found that with the treatment here described the skin remains moist. The patient must be kept warmly, but not oppressively, covered, and draughts avoided.

Our second indication is to counteract the malarial element in the attack, and this involves the question whether we are to give quinine or not. On this point there is considerable diversity of opinion. It will depend to a large extent on whether there is evidence of active malarial infection. If malarial parasites are found in the peripheral circulation, the author thinks it wise to give one dose at any rate, watching the effect on the urine, and if there is any recurrence of hemoglobinuria, the quinine

should be repeated. If there is any history of the attack having been caused by quinine it should, of course, be withheld. The safest method is the hypodermic, and the neutral hydrochlorate is the best salt. Five to eight grains may be given in this way. Another very useful method is the administration by rectum. Fifteen grains of hydrochlorate can be dissolved in a nutrient enema. Quinine does not make a good mixture with a milk enema.

Methylene blue has been recommended. The author has tried it once, but it has the great disadvantage of masking the color of the urine.

The third indication is to support the strength while the poison is being eliminated. In the milder cases food may be given in small quantities, and frequently by the mouth, in the form of essence of beef, sterilized milk and soda, thin arrowroot, and similar foods. A little brandy or champagne at intervals is beneficial. Where vomiting is a prominent and distressing symptom, once more leave the stomach alone. The strength can perfectly well be supported for several days by rectal feeding. After the large enema has been given in the morning, the author allows the patient to rest for a little, and then commences nutrient enemata, giving them every two hours through the day. He has generally given small enemata, 2 to 4 ounces, but larger ones, say 7 to 8 ounces, if they are thrown high up and very slowly with a long rectal tube, will often be retained. They can then be given at longer intervals and disturb the patient less. Peptonized milk and egg is one of the best forms of food to give in this way. Fresh milk is rarely obtainable in West Africa, and in its absence sterilized milk in bottles may be used, or, failing that, unsweetened condensed milk. As a more stimulating enema half an ounce of brandy may be given with advantage.

The author, however, gives a word of warning. It is very tempting when the heart is failing to keep pouring in alcoholic stimulants such as brandy, but he believes that there is a very distinct danger of over-

stimulating the heart. The result is that after a time it refuses to react to the stimulus and collapse takes place; 6 to 8 ounces in twenty-four hours is as a rule sufficient. Drugs can be added to the nutrient enemata, such as digitalis, ammonium carbonate, or strychnine. In the later stages the writer has often given strychnine hypodermically, in the hope of keeping the heart going, until nature would be able to reassert itself, but he cannot say that he has seen it do any permanent good in such cases.

The next indication is to alleviate any distressing symptoms. The most prominent of these is the vomiting. A large sinapism to the epigastrium gives a certain measure of relief, but rarely arrests it. He has found the ordinary sedative drugs, such as bismuth, oxalate of cerium, etc., of very little use. Minim doses of pure carbolic acid in a little water appear sometimes to soothe the stomach, and morphine or opium is sometimes useful. Small pieces of ice to suck do good sometimes, but in one or two cases the author has seen it aggravate the vomiting. The best thing is what he has already insisted upon—leave the stomach alone; do not go on teasing it by pouring in a lot of drugs in a vain attempt to soothe it. But there is an expedient which will be found of great service, and will often afford marked relief for a considerable time, and that is to wash the stomach out. By this the author does not mean to use the stomach tube, but to give the patient as much water as he can drink, and let him vomit it. The constant feeling of nausea and the retching seem very often to depend upon the presence in the stomach of a small quantity of irritating bilious matter, which the patient is unable to bring up, and if this is washed out along with the water, two or three hours' relief may often be obtained. And occasionally a copious draught of water has a curious result—it stops the vomiting entirely. The author has seen cases in which unceasing and distressing vomiting stopped entirely after the administration of a couple of tumblerfuls of water.

The great thirst may be alleviated by

allowing the patient to wash out his mouth with water acidulated with fresh lime-juice, or by painting the tongue with a mixture of glycerin and citric acid. In cases in which fluid can be retained the writer allows the patient to drink plenty of water or barley-water.

For the restlessness and depression little can be done; they will disappear as the hemoglobin is excreted. The dull, aching pain in the back may be sometimes relieved temporarily by friction with a liniment containing opium.

Occasional sponging of the body with tepid water with a little eau de Cologne or Florida water and fresh lime-juice in it will be found very soothing. Frequent bathing of the hands and arms is extremely refreshing.

For the sleeplessness which is generally present the author gives a hypodermic injection of morphine, if absolutely necessary, and he has seen no harm result from it. Bromides are somewhat depressing.

The author makes mention of a drug which has recently assumed some prominence, namely, Cassia O'Beariana, first described by O'Sullivan Beare in East Africa, and for which a specific action has been claimed. As originally used, it was given in the form of a decoction in large quantities, a teacupful every two hours, but Dr. Beare claims that the fluid extract well diluted with water has the same effect. The explanation of its action appears to be that it is a means of introducing a considerable quantity of fluid into the body, and if it has a sedative action on the stomach, as it would seem to have, it is undoubtedly a preparation of some value; but it is very doubtful if it has any specific action.

MUCOUS COLITIS.

HARRISON, in the *Lancet* of September 21, 1907, tells us that the treatment of mucous colitis resolves itself into that for the relief of the attack itself, and that calculated to remove the cause of the disease. The author first considers the treatment of a patient suffering from a definite attack,

and here the chief symptoms which require relief are the pain and constipation. Now, as it is decided that the pain is entirely due to efforts on the part of the bowel to remove the mucus which has been secreted into the intestines, treatment must be directed to the bowel to help it to completely evacuate its contents. This may be attained in two ways, namely, by the use of aperients and by enemata. The aperient which has been of most service in the cases which have come under the author's own observation is certainly castor oil, and it should be given in fairly large doses and repeated frequently; thus it has been the practice of the writer to order doses of half an ounce to be given three times a day until the passage of mucus ceases, and then to be diminished to half an ounce daily.

In a few cases there seems to be a great objection to the use of castor oil on account of its nauseating propensities, and in these cases the author has substituted calomel in doses of two grains three times a day. Enemata of ordinary soap and water, or containing four or five ounces of olive oil, have certainly been beneficial and have materially assisted the aperient in its action, and in cases in which there is much flatulent distention of the colon the addition of half an ounce of oleum terebinthinæ to the enema is useful. Irrigation of the colon certainly helps in the more rapid separation of the mucus from the walls of the intestine; and for this purpose ordinary warm water may be used at the temperature of the body, the injection being carried out by means of a funnel and a large-sized india-rubber catheter passed through the anus and gently carried higher as the water is poured in, as by this means the rectum is distended and the point of the catheter is not so likely to get caught in the folds of the mucous membrane of the intestine. At least two quarts of warm water should be employed at each injection. Various substances have been recommended to be used in solution for these high injections, such as sodium bicarbonate, sodium chloride, protargol one per cent, and silver nitrate one-half per cent, gradually increased in strength; but during

the height of the attack it has been the experience of the author that plain warm water affords the greatest relief, and afterward one of the above solutions may be used once a day to prevent, if possible, the further hypersecretion of mucus.

The patient should be kept in bed so long as the pain and passage of mucus continue, and hot applications to the abdomen should be used freely. For this purpose flannels are wrung out in hot water and a few drops of turpentine or liquid extract of opium or the tincture of belladonna sprinkled on. These hot applications certainly afford a sense of comfort and give a feeling of relief on account of their antispasmodic tendencies, and so relieve the irregular peristalsis to a certain degree.

With regard to diet during the height of the attack, nothing should be given for the first few hours until the more urgent symptoms have been relieved, and then small quantities of milk, previously peptonized, may be given, the quantity being gradually increased as the patient improves. Many authors have recommended the use of opium or morphine during the height of the attack, but he thinks that these drugs should not be employed for the relief of pain in this disease because their use will certainly check the peristaltic contractions and will increase the already existing constipation; and, moreover, as the persons who suffer from mucous colitis are nearly always of a neurotic temperament, they are also persons who would speedily develop a habit and so would always seek relief from pains of a most trivial character in drugs of this description. Of late years in obstinate cases operations have been much recommended with a view to giving rest to the colon in the hope that by so doing a complete cure might be the result.

The operations which have recently been tried are two in number. The first consists of making a lateral anastomosis between the ileum and sigmoid. A valve-like opening is then made in the cecum, into which a rubber catheter is placed, and the wound is sewn up, leaving the catheter in the cecum, as in the case of a gastrostomy;

by this means the colon is given complete rest and thorough irrigation of the large bowel may be performed. The result of this operation has not been satisfactory except temporarily; and on fully considering the nature of the disease a complete cure could hardly be expected, for the mucous secretion takes place as a result of a secretory neurosis and not from any local affection of the colon, and therefore any treatment which is directed toward giving the large bowel complete rest will not only not cure the disease but will be more likely to predispose the patient to a similar attack; moreover, the mental effect on the patient cannot be very beneficial, and the nutrition of the patient must also suffer very materially from cutting out so large an absorbing surface from the alimentary tract.

The second operation, which is being tried, is more simple in nature, and consists in opening the abdomen and bringing the appendix to the surface and suturing it in position. Having secured it, the distal end is removed, and so the appendix is made to take the place of the india-rubber catheter of the first operation. In this operation the colon is not given complete rest as no anastomosis is made with the sigmoid. The results from this operation ought to be more satisfactory than in the former case, because the functions of the colon are not interfered with and irrigation of the large intestine can be carried out very fully. Unfortunately the results of this operation are not known yet, as it has only recently been undertaken. But even if it secures a more rapid disappearance of the symptoms during an attack the result will not be permanent unless the further treatment of the patient is correctly carried out; and this treatment must be directed toward securing a daily action of the bowels, combating the peculiar nervous condition present, and to removing any obvious organic disease which might have a deleterious effect by reflexly inducing the neurosis.

In the first place a suitable diet must be recommended, and about this the opinions of the various authors of papers on the subject are diametrically opposed—for exam-

ple, von Noorden recommends a diet consisting of indigestible materials which leave a large residue, and he says that "the change from the patient's ordinary diet should be made suddenly, for then the unpleasant consequences are not nearly so lasting, but the nausea, sense of fulness, rolling noises, occasional pain, and dyspepsia pass off in from two to four days; whereas if the change from a light diet to a very indigestible one is made gradually the unpleasant symptoms remain for a much longer period." Langenhagen, on the other hand, says: "The diet is to be carefully regulated, so as to avoid all indigestible material or such as could possibly produce fermentation." This latter form of diet certainly appears to be more in accordance with the views already expressed in this thesis; for giving a carefully selected diet of highly nourishing substances must be the best means of improving the patient's nutrition, and so of improving the neurasthenia or other disease of the nervous system. A daily evacuation of the bowels is indispensable, and to attain this object full use of aperients must be made; and the particular one which has produced the best results in the author's hands is certainly castor oil, given in half-ounce doses daily, in the early morning, and continued for weeks, or months, or even after apparent recovery has taken place. If castor oil cannot be tolerated one of the other aperients must be tried, such as cascara sagrada, calomel, or the saline aperients, etc. Occasional use of the enema is also of great assistance. Abdominal massage is certainly beneficial and should be performed for half an hour daily until the action of the bowels becomes regular. High-frequency currents have been recommended, and a few of Hale White's patients derived some benefit, but in the majority no satisfactory result has been obtained from their application. Intestinal antiseptics are worse than useless.

With regard to the treatment of the nervous symptoms hydrotherapy and general massage are most useful, and patients are best treated away from home, where they can secure greater freedom from business

or social worries. If it is found impossible to treat the nervous condition and at the same time to give proper attention to securing a daily action of the bowels, every effort must be made to empty the large intestine, and doing this will so improve the general condition of the patient that in the majority of cases there will be an improvement in the nervous condition as well. If the disease is associated with any organic trouble, such as appendicitis, movable kidney, etc., these conditions should receive the appropriate treatment, operative if necessary, and if general enteroptosis exists an abdominal belt should be worn.

THE TREATMENT OF CHILBLAINS.

GARDINER in the *Practitioner* for January, 1908, gives the following advice:

Local Measures.—Foot and hand wear must be carefully chosen; warm it must be, tight it must not be, and it should not be rough and irritating.

Massage is very helpful, but especially so as a prophylactic. In the erythematous stage it may be too painful to be borne; again, here careful directions as to method must be given.

Two drugs stand out preëminently as of value in the early stages, viz., ichthyol and formaldehyde.

Ichthyol is well known to have a special effect in reducing congestion. Any strength may be used, but 10 to 20 per cent in lanolin serves most purposes. (The writer has used it in full strength painted on.)

This ointment, spread thickly on linen, and worn at night on the affected parts, often dispels a commencing attack after a few applications. During the day it may be used in the form of plasters, if convenient.

With the same end in view the author has tried adrenalin and adrenalin and chlorotone ointments, in a like manner, but although praiseworthy and more suited to esthetic minds, the author does not find them so useful as ichthyol.

Formaldehyde, an equally powerful drug, is one requiring much more care to employ

satisfactorily. The odor is pungent, and if there is the slightest abrasion of the skin, smarting effects are still more disagreeably evident. In ointment form it may be used in 10- to 50-per cent strengths: this method answers best when the patient has a sensitive skin; when, however, we have to deal with coarser skins, the remedy may be used pure.

The astringent action of the drug may go too far, and then the horny layer of the skin becomes hard and cracks. Consequently, after a few days it is advisable to stop using it, and apply lanolin or vaselin. It can be subsequently resumed if necessary. As an antiseptic it also prevents the complication of subsequent infection of the parts—there being many cases in which recovery is prolonged by the intrusion of surface organisms. If a distinction is to be drawn between these two agents, formaldehyde might be classed as more effective, more lasting in its results, but much harsher in its action, therefore more suited for the male sex, whilst ichthyol might be described as more soothing, more simple in its method of application, and undoubtedly better suited for delicate skins. Treatment may accordingly, in some cases in which there are cracks, be started with ichthyol and finished with formaldehyde.

Various applications are also commonly applied at this stage. Of these, iodine, either as tincture or painted on in collodion (2-per-cent iodine), silver nitrate in solution, and camphorated spirit are best known.

Electrical methods have long been recommended, generally galvanism, but as this necessitates, in its simplest form, a considerable number of batteries, it is not universally handy. The faradic current is easily used, requiring only a small coil with a bichromate cell, two small earthenware basins, such as are used in cooking, two small copper plates, and connecting wires. Warm water with a teaspoonful of salt is put in each basin along with a copper plate electrode, which is connected with a terminal of the secondary coil. The current may be varied by raising or lowering the

zinc in the bichromate cell, by the draw-tube of the coil, or by altering the depth or position of the copper electrodes in the basin. When the hands or feet are involved, the secondary circuit is completed by the patient placing an affected member in each basin. When other parts, such as the nose or ears, are involved, then one copper electrode is covered with gauze, soaked in salt water, and applied to the affected spot; the circuit being again completed by placing a hand in the other basin, which contains the remaining electrode. Ten minutes of this treatment every night will act promptly in many cases. Recently a patient had a severe attack on the left little finger and ulnar aspect of the palm. There were two large chilblains, and he could not bend the finger; he applied this method, and next day the pain was away, and only slight erythema left. Two sisters, both affected regularly every winter, came under observation. One, more delicate and suffering from mitral stenosis, used the above means, and no chilblains appeared; the other did not, and suffered. The plan suggested above is not new, but is apt to be overlooked in the rush after still more modern ideas. It may be said that the writer has found it very satisfactory chiefly in the early stages, and while not interfering with the action of other remedies, produces more prolonged results.

An x -ray and high-frequency outfit is not always present, but if available is more powerful than the faradic current, can be used in all stages, and is possibly more lasting in its effects. The treatment is much more expensive, but in severely recurring cases should be tried. So far, with the writer's limited experience, it is not possible to say which is better. Three cases have been tried with x -rays and three with high frequency, and although the action of each is different, both were successful.

X -rays have an atrophic effect, this being more pronounced on unhealthy tissue, hence they reduce inflammation and remove pain. Applied, as they have been by the author, in doses of ten minutes' duration, with a hard tube with 5 milliamperes in the sec-

ondary circuit, one or two applications have been followed by benefit; when continued thrice weekly, stopping short of reaction, the chilblains eventually disappear.

High-frequency currents can be applied by the effleuve, or by the vacuum electrode. In all cases it is wise also to improve the general tone by giving, at the same time, some ten minutes of autocondensation on the couch.

Theoretically, one might advise the use of x -rays in cases consequent on passive congestion, while high-frequency currents might be recommended where there was vasomotor nerve spasm.

In the ulcerating stage the most convenient application, apart from these electrical methods, is the following paste:

R Hydrarg. ammoniati, gr. v;
Ichthyolici, min. x;
Pulveris amyli,
Pulveris zinci oxidi, ää 3ij;
Vaselini, 3ss.

This spread unsparingly on linen, and changed frequently, suits most cases. If the ulceration is not severe, or healing is advancing, the recovery may be completed by Beiersdorf's zinc-ichthyol salve muslin.

In conclusion, by the various local means mentioned, coupled with general treatment, all cases should yield, and if failure occurs, suspect a wrong diagnosis, and that the right one may be lupus erythematosus.

THE SPECIFIC ACTION OF RADIUM AS A UNIQUE FORCE IN THERAPEUTICS.

ABBE in the *Medical Record* of October 12, 1907, reaches the following conclusions:

Radium ranks, not with caustics, cautery, antiseptics, or medication, but with specifics.

This does not mean a "specific" for cancer, in the popular sense, but for erratic cell growths constituting some types of tumor tissue in the earlier stage of invasion, or of moderate development.

Details of the methods of using it have not yet been fully worked out. The dosage, so to speak, or time of exposure necessary for curative action, is as yet empirical.

Some apparent cures of small epithelio-

mas or sarcomas have endured already more than three years.

A photographic plate provides a good test, to show the working force of an unknown specimen, in comparison with one of standard strength.

It is not entirely a mysterious force, but, in part at least, is an electric discharge, essentially of negative elements. Hence, as far as it is possible to say, it suggests a theory of its action, in that it may supply an element of electric force vital to normal and orderly growth, the loss of which may have caused a disorderly cell growth which, in the aggregate, constitutes tumor masses.

It is supplementary to Roentgen rays, and in some cases is efficient where they fail.

The overaction of strong radium is destructive and vitiates the benefit of moderate use.

The best results have followed one hour's exhibition of the working unit (10 mgr. R. Br.) on small growths, and three to four hours on larger ones, with an interval of one month for study of the effect.

Ischemia of the parts during treatment greatly enhances its action.

Pigmented moles, melanotic growths, and giant-cell sarcomas, like epithelioma of the eyelids, face, and body, are particularly susceptible to its curative action, as a specific agent. But its value in nevoid and angiomatic tumors is due to its irritant action, producing obliterating endarteritis and fibroid changes.

SUBCUTANEOUS INJECTIONS OF AIR AS A MEANS OF RELIEVING CERTAIN PAINFUL MANIFESTATIONS.

GUBB in the *British Medical Journal* of November 9, 1907, writes of a plan of treating neuralgic pain.

Cordier's method was that employed, and the object is to distend the tissues by the insufflation of air beneath the skin. The purely mechanical action of the distention was proved by the fact that the results were approximately the same whether plain air, oxygen, hydrogen, nitrogen, or carbonic acid gas was employed. The only differ-

ence observed was in the comparative rapidity with which they underwent absorption. With the experience of many hundred injections, he states that the injections are perfectly innocuous, that they require no special apparatus or appliances, nor even any special operative dexterity, and that in a whole series of painful affections they yield results often very satisfactory and sometimes really remarkable.

The procedure is simplicity itself. The pumping apparatus is supplied by an ordinary rubber bulb provided with an elastic reservoir such as is used for Paquelin's thermocautery, a length of rubber tubing in which is inserted a glass bulb filled with sterilized cotton, and an iridio-platinum needle. The latter is sterilized just before use by heating in the flame of a spirit lamp. The fingers of the operator and the skin of the patient must of course also be sterilized. It is well to have an idea of the cubical capacity of the bulb in order to know how much air has been introduced.

Having taken these preliminary precautions, the needle is plunged through the skin over the seat of the pain; then, after waiting a few moments to see that no blood exudes, showing that the needle has not entered a blood-vessel, the insufflation is commenced. This should be done gently, very slight pressure sufficing to overcome the elasticity of the skin. A rounded swelling forms round the seat of puncture, and when the air reaches a vascular or nervous sheath it rapidly spreads along it, and secondary swellings may form at a distance. These secondary ramifications are specially apt to form in the limbs, where the sheaths are more numerous. The skin at first becomes blanched, but this soon gives place to a pronounced redness which persists for some hours. The air takes several days to undergo complete absorption, and under the influence of muscular contraction travels far and wide, so that the characteristic crepitation of "surgical emphysema" may be felt at spots distant from the seat of the original injection. No pain whatever is experienced, even when comparatively large quantities of air are injected—at most a sense of dis-

tention, "pins and needles," or pin-pricks. Cutaneous sensibility is at once diminished, the skin becoming more or less numb.

The needle having been withdrawn and the puncture sealed by a drop of collodion, the next step is to massage the part. The subcutaneous air must be alternately dispersed and brought together again, especially over the painful spots. This massage is an indispensable part of the procedure, and must be conscientiously carried out; indeed, patients should be directed to repeat the process daily as long as any resonance remains.

The procedure is applicable to the relief of pain due to all forms of neuralgia and neuritis. The only precaution is to vary the quantity of air injected according to the anatomical structure of the part. For instance, we may inject 200 or 300 cubic centimeters of air in the gluteal region, while over the thorax from 10 to 30 cubic centimeters will be enough. In the neuralgic pain that follows extensive zona it is best to make several small injections, one over each painful spot. In intercostal neuralgia one small injection behind near the vertebral column should be made, and another in front, about two inches from the middle line.

In the treatment of sciatica the injections should be made in the lumbar region, on the outer side of the thigh and on the superoexternal part of the leg, round about the head of the fibula, as well as over any painful spots in the lower part of the leg and the dorsum of the foot, to be followed in every instance by systematic massage.

The only forms of neuralgia which the author has not so far ventured to treat by this method are those of the face, though there is no obvious reason why, in cases that prove refractory to the action of analgesics, it should not be employed. In this situation, however, 3 or 4 cubic centimeters of air should suffice.

In no instance has any mishap attended this mode of treatment, although it has now been practiced many thousand times, so that it may be safely affirmed to be devoid of risk. Nervous patients, especially

women, occasionally complain of a feeling of constriction in the neck when the air finds its way into that region, but the sensation is very fugitive and never amounts to serious inconvenience.

The author's personal experience includes eleven cases of sciatica, several of them being severe and of some months' standing, and in only one case did the result fall short of his expectation, the patient being a highly neurotic elderly woman, who went to Aix-les-Bains for the treatment of arthritis deformans and acute sciatica. Even in that case some relief followed each injection, five in all, but the pain recurred a few days later. He has often found it necessary to repeat the injections, but never more than three times, except in the case just referred to.

Gubb has also treated several cases of neuritis of the brachial plexus, two in the acute stage, and very marked relief, which was maintained so long as the muscles were kept at rest, was afforded. Tempted by the improvement, some of the patients resumed the use of the arm and provoked a return of the pain, though in a milder form.

ON "CHLORIDE DEPRIVATION" IN THE TREATMENT OF BRIGHT'S DISEASE.

STRAUSS in *Folia Therapeutica* for October, 1907, says with regard to chloride deprivation that it may be divided into two parts: (1) The alimentary, or regulation of the intake of chloride into the body; (2) the medicinal, or measures for increasing the output of chloride from the body.

For reducing the chloride intake, those foods should be withheld from the patient in which a high percentage of sodium chloride is either present from the first or is acquired in the course of their preparation. In this connection experiments were carried out by one of the writer's pupils (Dr. Tischler) from which it appeared that by the ordinary means of preparing food, the raw material of which is poor in sodium chloride, a relatively large percentage of sodium chloride can be acquired. This applies especially to soups and prepared meat

and vegetables. It is not enough, however, to demand that great sparsity of salt shall be observed in the preparation of the raw material. What is also required is that those foods shall be preferred which contain but little sodium chloride in themselves, and which require but little in their preparation for the table. Such foods are to be found in milk and fruit, and in the various kinds of berries. Bread, as ordinarily made, is by no means poor in sodium chloride, and the use of bread prepared without salt is therefore to be recommended. Bouillon and meat broths should be replaced by soups made from fruit, and eggs must be prepared with a minimum of salt; butter should also be used unsalted. Of other products of milk, the more piquant cheeses usually contain from one to three per cent of salt. The chloride percentage of the various mineral waters is by no means a negligible quantity where chlorine deprivation is concerned, and only those containing a minimum of sodium chloride can be recommended. For domestic purposes it will be found practicable to measure out about a teaspoonful of salt to be set aside for the whole day's consumption, and distributed over the various culinary operations.

For increasing the chloride elimination, the preparations of caffeine are well adapted, especially diuretin and theophyllin. The writer was able to show in his first publication that under the influence of diuretin not only was the total quantity of urine increased, but that notwithstanding the increase in quantity the percentage of sodium chloride was considerably raised. Indeed, it frequently happened that the effect of the diuresis in combating the anasarca was especially marked when, under the influence of diuretin, the percentage of sodium chloride in the urine was considerably raised. While it was formerly held that the caffeine preparations exercise their effect by direct stimulation of the renal epithelium, Otto Loewi has shown that their action is to be referred to the production of an intense active hyperemia of the organ. This fact is not only of theoretical but also of practical interest, as voices have

lately been raised in warning against the use of "epithelium-stimulating" caffeine preparations in cases of advanced parenchymatous lesions. The author, although having employed these preparations in a large number of cases, even of the most severe parenchymatous nephritis, has never seen any untoward result which he was in any way able to attribute to diuretin. The desired plethora of blood in the kidneys is in his experience best attained by combining diuretin with a cardiac tonic, and of these digitalis has in his hands given the best results.

The following combinations will be found serviceable:

℞ Pulv. fol. digital., gr. 1½;
Diuretin, gr. xx;
Sacchar. alb., gr. iv.

Misce; ft. pulv. No. x. One powder to be taken three times a day.

℞ Diuretin, 3iij;
Extr. digital. fluid, m. xxv;
Ol. menth. pip., m. iij;
Aquæ destillati, q. s. ad f3viiij.

One tablespoonful every three hours.

In a great many cases the disappearance of dropsy may be brought about by diminishing the ingestion of sodium chloride only; in other cases, however, combined treatment by both alimentary and medicinal means is necessary, and it is only when the desired result cannot be arrived at by one or both of these means that capillary drainage of the subcutaneous tissues or the tapping of effusions into cavities need be considered. In the opinion of the author, however, the latter procedure merits as frequent use in private as in hospital practice.

An account of the regulation of chloride metabolism cannot well be concluded without some mention of the question of the consumption of water. This question is a many-sided one, and as many views are held cannot here be the subject of detailed discussion. It may, however, be pointed out that deprivation of water alone, without withdrawal of chloride, is purposeless, since with the chloride intake remaining undisturbed thirst will be provoked. We know that this thirst occurs in response to a necessity of the body, since the accumulation of

sodium chloride creates a demand for water, and the water consumed serves the purpose of diluting the sodium chloride in the body juices until their normal concentration point is reached. The question as to whether in addition to sodium chloride deprivation the intake of fluid should also be restricted, is variously answered by different authorities. The writer has always expressed the opinion that, in cases of existing, or threatening, uremia, the intake of water should not be restricted; and he still holds this view, since dropsy is easier to deal with than uremia. Even in the absence of uremia, or symptoms suggesting it, he is not accustomed to withhold water to such an extent that the patient is tormented with thirst.

ADENOIDS IN INFANCY.

MORSE states in the *Journal of the American Medical Association* of November 9, 1907, that adenoids will almost always be found in those babies who are subject to frequent "colds in the head," and are undoubtedly most important in their etiology. In fact, repeated "colds in the head" are rarely met in infancy when there are no adenoids. The infants continue to have "colds," moreover, in spite of local or general treatment until the adenoids are removed. A "cold in the head" in infancy is not the simple thing that it is in older children and in adults. It is often a serious matter, and in some cases may even prove fatal. It hardly seems worth while, however, to report specific instances in which babies who had had repeated "colds" have been completely relieved by the removal of the adenoids, as there is nothing to report except the bare facts.

Adenoids are also one of the commonest, if not the most common, cause of chronic "snuffles" in infancy. They are usually overlooked in this connection, however, because the baby does not keep its mouth open, snore at night, or have the typical facies of adenoids in later childhood, there being apparently a general impression that there can be no adenoids, at any rate no

adenoids of importance, unless these symptoms are present. In infancy, however, chronic "snuffles" is almost as suggestive and characteristic of adenoids as these more marked symptoms are in childhood. In most cases the "snuffles" continue until the adenoids are removed. In some of the mild cases, however, operation is not necessary, and local astringent and stimulating treatment gives good results. The author uses the following mixture:

Iodine, $\frac{1}{4}$ to $\frac{1}{2}$ grain;
Camphor,
Menthol, $\frac{1}{2}$ to 1 grain;
Benzoinol, 1 fluidounce.

From five to ten drops of this mixture are put into each side of the nose with a dropper every three or four hours, with the baby lying on its back so that they may run through into the nasopharynx. This is altogether the best way of making applications to the nose and nasopharynx in infancy, sprays being of little use at this age because of the fright and struggling which they induce.

THE TREATMENT OF TRIFACIAL NEURALGIA BY MEANS OF DEEP INJECTIONS OF ALCOHOL.

In the *Journal of the American Medical Association* of November 9, 1907, PATRICK tells of his experience with this plan of treatment. He adopted entire the method of Lévy and Baudouin, including their needle, as it seems to him to be the simplest and safest. The aim is to reach the inferior maxillary branch of the fifth nerve just after its exit from the foramen ovale, the superior maxillary branch just after its exit from the foramen rotundum, and the first or supraorbital branch immediately after its entrance into the orbit, and to place an injection of alcohol at this point, within the nerve sheath, if possible. The instrument employed is a straight needle, 1.5 millimeters in diameter and 10 centimeters long, fitted with a stylet exactly like a trocar, except that in this case the needle is sharp and the stylet blunt. The needle is marked in centimeters from the point up to

five, so that the operator may know what depth he has reached. In making the operation the stylet is at first slightly withdrawn and the puncture made with the sharp point of the needle. After the point is well through the skin and subcutaneous tissue the stylet is pushed home. In this position its end is flush with the needle point, making a blunt instrument for the remainder of the penetration; this to avoid injury of deep blood-vessels. Having reached the proper depth, the stylet is withdrawn, the syringe, already filled, is fitted to the needle, and the injection slowly made. Ordinarily he allows the needle to remain *in situ* a couple of minutes to avoid oozing from the puncture. Sometimes there is no bleeding. Pressure for a few minutes has always controlled such oozing, as the writer has seen. The puncture dry, a touch of collodion serves as dressing.

The solution first used is 75-per-cent alcohol, containing a little chloroform and a little cocaine. The author now begins with the following:

Cocaine hydrochlorate, gr. j;
Chloroform, m. x;
Alcohol, 3iij;
Distilled water, sufficient to make 3ss.

Mix.

Of this he injects 2 cubic centimeters. For succeeding injections the proportion of alcohol is increased, so that if several are needed for the same branch the strength of the solution reaches about 90 per cent. For this stronger solution he doubles the amount of cocaine, as it is more painful than the weaker. Into his earlier injections, following the suggestion of Lévy and Baudouin, he puts a moderate dose of morphine, but one of his patients vomited rather severely several hours after the first injection, so he has used no morphine since; it is not needed. The injection once made, the pain is astonishingly slight. Ordinarily there is only a rather uncomfortable sense of pressure or tension, sometimes some diffuse headache, which in one case lasted for two days, but no real suffering. For reaching the different branches of the nerve the procedure is as follows:

For the inferior branch the needle is inserted at the lower border of the zygoma 2.5 centimeters in front of the descending root of the zygoma, which always can be felt, and almost coincides with the anterior bony border of the external auditory meatus. The needle is directed slightly upward so as to hug the base of the skull, and a little backward, and at a depth of 4 centimeters should reach the nerve at its exit from the cranium.

To attain the middle branch the line of the posterior border of the ascending (orbital) process of the malar bone (ascending to articulate with the frontal) is prolonged to the lower border of the zygoma and the needle inserted .5 centimeter posterior to this point. It is directed vertically to the anteroposterior line, but inclined slightly upward in a direction which would attain, at the depth of the foramen rotundum, the level of the inferior extremity of the nasal bone. At a depth of 5 centimeters the nerve is reached at its emergence from the foramen rotundum into the pterygomaxillary fossa.

Lévy and Baudouin advise reaching the supraorbital branch by inserting the needle at the external margin of the orbit opposite the frontomalar articulation (suture), passing it along the external orbital wall to a depth of 3.5 centimeters, when the point should reach the nerve. This injection the author has made but once.

In a consideration of any new treatment the questions to be answered relate to its various results and difficulties. These questions he takes up in the rather illogical order of uncertainties, difficulties, dangers, unpleasant effects and complications, and therapeutic results.

It requires little experience or reflection to realize that no one can uniformly touch with a needle a given point 4 or 5 centimeters (two inches) below the surface. To this physiologic or mechanical uncertainty of accuracy is added, in the present procedure, the uncertainty of cranial and facial variations. Skulls vary greatly in size and shape, which means not only that the foramina in question are at various depths

from the zygoma, but that their location relative to other points cannot always be the same. In some persons the zygomatic arch is much shorter than in others; in some its lower border is higher as regards the base of the skull. Some skulls have a very wide bony ridge external to the orbit; others a narrow one, and the angle of its posterior border (our landmark) shows a variation of a good many degrees. According to the experience of the author, in about every fifth person the coronoid process of the inferior maxilla extends so far forward that the needle introduced at the point of selection impinges on it. In this case the puncture must be made further forward, consequently lower, as the lower border of the zygoma here turns downward, and naturally this necessitates directing the needle at quite a different angle. Another uncertainty, or perhaps one should say difficulty, encountered is a very narrow or very irregular pterygomaxillary fossa apparently leaving a mere chink for the passage of the instrument. Needless to say, the amount of adipose tissue covering the bone varies between wide limits, and while its thickness may be fairly well estimated by causing the needle to strike the edge of the zygoma and measuring its depth by the centimeter gradations on the instrument, it introduces another uncertainty into the accuracy of the operation. When the injection is done without an anesthetic (as is nearly always the case) some patients move the head or the jaw or make grimaces, all of which tend to deflect the needle. If an anesthetic is used the operator is denied the assistance of the patient's sensations.

In the light of the foregoing it is obvious that one never can be sure of placing his solution just where he wants it. The author asserts he has certainly missed the nerve oftener than he has struck it. Even in the same patient, having once attained the nerve with accuracy, he is never sure of doing it again. The inferior branch seems to be easier to reach than the middle one, but he has found that in most cases it is better to make the puncture a little fur-

ther back than the point advised by Lévy and Baudouin. Fortunately, it is not necessary to get the alcohol into the nerve sheath, though, of course, this is desirable.

The difficulties are not great. Given a reasonably accurate knowledge of the anatomy of the parts concerned, a good idea of their relative topography, a fairly good eye or power of visualization, and the proper instrument, the writer thinks any physician can do this little operation. The real difficulty is that of accuracy, the difficulty of striking the nerve.

Doubtless all the dangers are not yet known. This must be true of any new operation. The known dangers are few. The author has not heard of the occurrence of infection. It goes without saying that the ordinary means must be employed to insure clean instruments, clean hands, a clean surface, and a clean solution. With a mere puncture and the injection of a 75-per-cent alcoholic liquid, the risk of infection is minimal. Certainly it cannot be said to be impossible, and an abscess at either of the foramina in question would be a real danger.

The danger of serious hemorrhage is reduced by the blunt point of the stylet. It will be remembered that the middle meningeal artery passes through the foramen spinosum very close to the foramen ovale and might easily be reached by the needle. Assuming that the instrument were pressed squarely against it close to the bone, it is possible it might be lacerated, but the writer has not heard of this accident occurring. Anomalous distribution aside, no other large artery lies in the course of the injection, and he thinks serious hemorrhage would scarcely occur from a vein unless it were a very large one.

The intraorbital injection for the first division he considers hazardous on account of the proximity of the motor nerves to the eye muscles. Even the optic nerve is not far away, and as the alcohol diffuses to some extent this nerve might be involved. Just how real these supposititious dangers are he does not know. His single orbital injection did no damage.

Lévy and Baudouin in their paper called attention to the danger of causing paralysis of the sixth nerve. They had met with this complication twice. In a later paper they said this paralysis might be quite transient or last for several months, and attributed it to passage of the alcohol into the cranial cavity through the foramen lacerum posterius. This occurred, of course, only in injection for the inferior branch, and, they said, only when the needle was introduced too far.

They also note the possibility, in operation for the middle branch, of introducing the injection into the orbit, and this the author asserts he is quite sure he has done once. Inspection of a skull will show how easily it may happen. The patient on whom the author inflicted this inaccuracy was one of those with a coronoid process reaching far forward, necessitating puncture further forward and much lower than usual. As he was injecting the fluid with some force (to promote its diffusion) the resistance suddenly gave way; the patient exclaimed, "What a strange sensation in my eye!" and the remainder of the fluid went rapidly in. Another time, the author states, he would stop the injection at once. The accident had no serious results, but an enormous edema of the upper lid developed with incredible rapidity. The patient's eye was closed for several days, and it was several weeks before all trace of the swelling disappeared.

Inspection of a skull also will show how easy it would be to pass the instrument into the roof of the pharynx or posterior naris, but this accident would be unpleasant rather than dangerous.

Necrosis, such as has occurred from the injection of osmic acid, scarcely needs consideration.

Unpleasant effects and complications are, in the experience of the author, very few. First, a few words concerning the pain of the operation. It is not excessive. One patient, hypersensitive and made timid by years of suffering, complained greatly, and after the second or third injection asked for gas, which was given her

for subsequent operations. This is the only case in which the author has used an anesthetic. As might be expected, some patients are more sensitive than others. Sometimes there is no complaint at all. Subsequent injections are, on the whole, less painful than the first. The greatest pain is caused by the stylet striking or scraping bone at the base of the skull and by its impinging on the nerve. The injection of the alcohol itself is apt to cause sharp pain for a moment, especially if forced in with considerable pressure. This soon subsides.

A considerable proportion of the author's injections have been made in the office, and after a few minutes the patients have been able to go about their business. Occasionally there has been what seemed to be mild emotional shock. There can be no doubt that the sensation of an instrument penetrating to the base of the skull is anything but pleasant, and for a timid or sensitive person it may be rather terrifying. Real shock or any effect on pulse or vasomotor system he has not seen.

Allusion has already been made to diffuse headache as a result of the injection. As a rule it is transient and not severe. After injection of the inferior maxillary there is apt to be, for two or three days, a little soreness and stiffness about the articulation of the lower jaw. Injection of the middle or inferior branch causes slight swelling of the face, and the one intraorbital injection he has made caused considerable edematous swelling of eyelids and conjunctiva with ecchymosis like an ordinary "black eye."

When the needle attains the nerve the patient feels pain in the area of its distribution, and immediately after the injection this area has a swollen, stiff feeling. Occasionally, especially in the tongue, there is a feeling of soreness or burning. When the injection has been very successful, the area of distribution is relatively analgesic. These are trifling discomforts of which patients make no complaint.

Aside from the distressing emesis in one case, due, the author believes, to the morphine, no patient has vomited.

THE CORRECTION OF CERTAIN FORMS OF "SADDLE-NOSE."

FREEMAN (*Annals of Surgery*, August, 1907) after trying both paraffin and metal supports is convinced of the superiority of the latter, provided they are properly inserted. The plates are indicated in cases in which the deformity is so great that in order to correct it paraffin would have to be injected under considerable pressure, and yet not so great as to prevent sufficient stretching of the skin to permit the insertion of a plate. Very bad cases in which the skin is bound down by scar tissue must be treated by plastic operations, if it is thought best to do anything with them at all.

The celluloid plate is preferable to the metal one. Its length should be carefully determined, so that its upper end will rest upon the bone above, while its lower end is supported by the firm tissues of the extremity of the nose. The corners and edges should be well rounded and not too sharp, and it should be perforated with as many small holes as possible without weakening it too much, in order to permit of easy and thorough incorporation within the tissues. It must be curved slightly from side to side and wide enough to properly round out the bridge of the nose. It must not be unnecessarily thick, but it must be heavy enough to keep its shape under all ordinary conditions.

Freeman makes a short incision across the root of the nose between the eyes. Through this the skin is undermined along the bridge of the nose to the tip, and also well down the sides should it require much stretching. This is easily accomplished, and almost bloodlessly, by the use of a pair of blunt scissors, curved on the flat, the blades of which are opened and closed as they are pushed forward. When the saddle is pronounced, the skin can be stretched by inserting under it the point of an ordinary blunt, curved sound, with the convexity resting upon the forehead in order to obtain leverage. After the pocket beneath the skin has been prepared it will be found that the convexity of the nose will necessitate the insertion of the plate at such an angle that

its end will catch in the tissues, thus preventing it from sliding into position. In order to obviate this, the tip of the nose should be perforated with the point of a large darning-needle. The needle should then be reversed and its blunt end pushed upward subcutaneously until it passes out through the incision. On top of this needle, as a guide, the plate may easily be slid into place. The wound is then closed with a subcuticular suture, a little cotton, and collodion. There is no tendency to gape.

Freeman states that he has operated on one case of saddle-nose resulting from specific disease in which the deformity was too great to be overcome by the injection of paraffin. Primary union occurred, and the result remained satisfactory for about eight months; but the edges and corners of the plate being rough and sharp, it finally perforated the nasal cavity and had to be removed. This was the fault of the plate and not the method, and could readily be avoided in the future.

THE TECHNIQUE OF DIRECT TRANSFUSION OF BLOOD.

CRILE (*Annals of Surgery*, vol. xlv, No. 3) describes the technique of direct transfusion of blood as based upon 225 experiments on animals and 32 clinical cases.

In the clinical transfusions the radial artery of the donor and the proximal end of any superficial vein of the arm of the recipient are utilized. The radial artery is chosen because it is easily isolated and may be readily adjusted to the position of the vein of the recipient. Unless contraindicated the donor and the recipient are each given a hypodermic injection of morphine twenty minutes before the transfusion. Before they enter the operating-room, after their arms are prepared, and for the purpose of minimizing the psychic factor, a nurse places over their eyes a wet towel with the diverting explanation that the eyes must be protected from the bright light to prevent headache.

The donor is placed upon an operating

table of the Trendelenburg type, so that should he faint the head may be readily lowered. The recipient is also placed upon an operating table with his head in the opposite direction from the donor. By the use of an infiltration anesthesia of 0.1-per-cent solution of cocaine, about 3 centimeters of the radial artery is exposed, and the smaller branches tied with very fine silk; a "Crile" clamp is applied to the proximal end of the artery and the distal end is ligated; the artery is then divided; the adventitia is pulled over the free end as far as possible and closely snipped off; a moist saline sponge now covers this field. Three or four centimeters of a superficial vein of the recipient is then likewise freed, the distal part ligated, and the proximal closed with a "Crile" clamp; the distal part is divided with scissors, the adventitia drawn out as far as possible and closely snipped off; the vessels are then inspected, and a cannula whose bore is larger than the actual tissue thickness of either vein or artery is selected. The vein may then be pushed through this tube, after which the freed end is turned back like a cuff and snugly tied in the second groove. During this time the handle of the cannula is steadied and manipulated by means of a forceps. If the artery is small or atheromatous, or if it is contracted for any reason, its lumen may be dilated by means of a mosquito hemostat, pushed into the lumen and gradually opened. The artery is then drawn over the vein and is snugly tied with a small linen ligature in the first groove. This completes the anastomosis.

The clamp is then removed from the vein, afterward gradually from the artery, when the blood stream will be seen to pass from the artery across to the vein, dilating the latter. The exposure and manipulation of the vessels, especially the artery, causes sharp retraction, which may be so marked as to obliterate its lumen. The constant application of warm saline solution and protection from the air will help materially in bringing about relaxation, and, hence, a larger stream of blood. The pulse wave may be palpated in the vein. It is best to

introduce the blood very slowly, carefully watching the result.

The author has reached the following conclusions: That the vascular systems of two individuals may be united so that intima comes in contact only with intima; that this may be accomplished by the Carrel suture or by a special anastomosis tube, which is the method of choice; that blood may be transferred without clotting; that the use of the radial artery of the donor and any superficial vein of the recipient yields the best results; that the operation may be done painlessly; that the blood lost by the donor is regained in from four to five days; that the amount transferred is under the immediate control of the operator; and that the rate of transference should be carefully gauged because of the risk of overcharging the pulmonary circulation.

ARTERIOTOMY FOR THROMBOSIS AND EMBOLISM.

STEWART (*Annals of Surgery*, vol. xlv, No. 3) reports two cases upon which arteriotomy was performed. The first was a man aged sixty years, who had been subjected to compression over the lower portion of the abdomen and the upper portion of the thigh. A few hours later the patient began to complain of severe pain in the popliteal space, radiating down the leg to the foot and toes, and pulsation was absent in the arteries of the lower part of the limb. The femoral artery could not be examined on account of the swelling. In the first place the popliteal artery was opened by a small longitudinal incision, but no clot was found; then an incision was made over the femoral artery from just above Poupart's ligament downward and the artery opened. A black, firmly adherent clot was found and removed and the artery closed. In a short time, however, pulsation again ceased in the distal portion of the artery, and the stitches were removed and a newly formed clot turned out. A clot again formed, and the artery was then divided and an end-to-end anastomosis done. The circulation was not restored, and the leg

was amputated ten days later. The patient finally recovered.

The second case was a man, aged sixty years, who developed signs of arterial obstruction at the bifurcation of the femoral artery. On opening the artery at this point a thrombus was discovered and removed. The vessel was closed with continuous through-and-through suture of silk, and over this a second layer uniting the outer coat was placed. The pulsation returned in the popliteal but not in the tibial vessels, but gradually grew weaker and disappeared on the eighth day. A short time afterward gangrene developed, and it was necessary to amputate the leg below the tubercle of the tibia.

The author concludes that this operation may be readily performed without danger of secondary hemorrhage. It is particularly indicated when the intima is smooth, and to be of value must be performed as soon as possible after the arterial obstruction develops. Even though the vessel again becomes obstructed with clot, this may form slowly and give the collateral vessels an opportunity to dilate, thus saving at least a portion of the limb.

AN EXPERIMENTAL STUDY OF THE SUTURE OF BLOOD-VESSELS AND THE IMPLANTATION AND TRANS- PLANTATION OF VESSELS AND ORGANS.

WATTS (*Annals of Surgery*, vol. xlv, No. 3) gives a history of the suture of blood-vessels, implantation and transplantation of vessels and organs, and details a number of experiments performed by him on dogs. The vessels were clamped with small spring clamps whose blades were armed with rubber. They were then divided and freed from their loose connective tissue. The suturing was done by means of very fine straight needles and fine China silk, the thread being greased with vaselin. The vessels were kept from drying by the application of normal salt solution or sterile vaselin. The suturing was done according to Sarrel's method. The tissues over the vessels were then approxi-

mated with fine silk sutures and the skin wound was closed with a subcuticular suture of the same material. The wounds were dressed with silver foil, and, when the operation was on the neck, a crinoline bandage was applied. The common carotid artery was sutured thirteen times. All the sutures were successful, and in no case was there the slightest evidence of thrombus formation. The femoral artery was sutured twice, thrombosis occurring both times as the result of wound infection. The external jugular vein was also sutured thirteen times, ten of the sutures being successful.

Microscopic examination of the arterial sutures at periods varying from twenty-eight to eighty-two days after the operation showed that there was a gradual restoration of the artery at the site of the suture, and that, with the exception of the inner elastic membrane, all the elements of the vessel wall were properly regenerated. The common carotid artery was sutured to the external jugular vein four times, all being successful. In these cases the walls of the vein became thickened, and in some cases showed changes similar to those found in arteriosclerosis. The central end of the femoral artery was sutured to the distal end of the femoral vein four times. One case was successful; in the others thrombosis occurred. In four animals a lateral anastomosis of the femoral artery and veins was made. In all cases the immediate result was quite satisfactory. In only one of the animals, however, did the anastomosis remain patent. Excision and implantation of a section of the vein into an artery was tried twice. In one instance a section of the external jugular vein was transplanted into the common carotid artery with perfect success. Transplantation of the thyroid gland was done six times, but without success. The results show that completely divided vessels can be sutured with almost uniform success when aseptic technique is good. The intima can be included in the suture with impunity, the application of the suture being thus greatly facilitated. Infection is by far the most important factor in producing thrombosis after vascular sutures.

There may be minor grades of infection which, although allowing per primam healing of the wound, may be sufficient to produce thrombosis of the sutured vessels.

DRAINING CIRCUMSCRIBED ABSCESSSES OF THE PANCREAS.

BREWER (*Surgery, Gynecology, and Obstetrics*, vol. v, No. 3, 1907) says that during the past year he has on two occasions been obliged to open and drain a circumscribed collection of pus in the pancreas. In one instance the abscess was located in the head of the organ. In another it was situated about its middle. The following method of drainage was employed:

A median incision, about 10 centimeters in length, was made through the left rectus muscle, and the abdomen opened. The transverse colon with its mesentery was turned upward, and the body of the pancreas palpated through the transverse mesocolon. As soon as the indurated area was reached, the intestines were walled off by gauze pads and an exploring needle plunged through the inferior layer of the mesocolon into the center of the mass. A syringe of creamy pus was withdrawn. The needle-opening was cautiously enlarged by introducing a closed pair of thin-bladed dressing forceps and withdrawing them partly opened. About two ounces of pus was evacuated and the cavity syringed out with peroxide of hydrogen. A long, rubber drainage tube, 15 millimeters in diameter, was then introduced into the small opening and tightly packed about with a thin strip of folded gauze tape to prevent leakage of the pus along the side of the tube. The tube and gauze packing were then secured in place by a single stitch of plain catgut. The distal extremity of the gauze tape and the long drainage-tube were then brought out at the lower angle of the wound, leaving ample space for the transverse colon and small intestines to fall into their accustomed places and form adhesions around the 25 or 30 centimeters of the drainage-tube, which passed from the abscess to the lower angle of the cutaneous wound. After

cleansing the contaminated area of peritoneum the external wound was tightly closed around the tube and tape by layer suture and a sterile dressing applied.

Practically no reaction followed the operation. The drainage was free from the first forty-eight hours, after which it diminished rapidly in amount. The tube and tape were allowed to remain in place for eight days, when they were easily withdrawn. The abdominal wound closed rapidly and the patient made an uninterrupted recovery.

In the second case the technique was exactly the same, except that the pancreas was exposed by division of the gastrocolic omentum, and the tube was much shorter and passed directly from the abscess cavity to the external wound, while in the first case it described a gradual curve to allow the transverse colon to fall into place. The recovery in this second case was also prompt and uneventful.

THE TUBERCULO-OPSONIC INDEX AND TREATMENT BY TUBERCULIN.

JEANS and SELLARDS (*Bulletin of the Johns Hopkins Hospital*, vol. xviii, Nos. 195-196) in discussing the tuberculo-opsonic index and the treatment of tuberculosis by tuberculin say that theoretically the most suitable cases for treatment with tuberculin would seem to be those of localized tuberculosis in which the presence of secondary infection is unlikely or very improbable. Such localizations are found in the bones, glands, and joints. While in tuberculosis of the bladder and in lupus the rôle of secondary infection cannot be excluded, it seems to be of little importance. Pulmonary tuberculosis is not suitable to the employment of the specific treatment, because here secondary infection probably plays a considerable part.

Nine cases are reported, of which two were tuberculosis of the glands of the neck and two tuberculosis of the hip, and one each of tuberculosis of the head of the humerus, the ankle, the bladder; one was a case of lupus vulgaris. The results in these

cases were such as to justify further continuation of the methods of treatment. In none of the cases was the result miraculous, but in certain of them there seemed to be a very definite relationship between the treatment and the improvement in the patient's condition. It is important that in addition to the treatment hygienic measures should be carried out.

A SIMPLE METHOD OF REMOVING STONES FROM THE LOWER URETER.

BARTLETT (*Surgery, Gynecology, and Obstetrics*, vol. v, No. 3, 1907) describes the procedure which he has developed for the removal of stones from the lower ureter, by means of which it is easy to find and extract stones of moderate size lying anywhere in the pelvic portion of the tube.

An incision is made parallel to the external border of the rectus muscle extending from the semilunar fold of Douglas to the pubis. This goes down to the peritoneum, which is not opened but gently pushed toward the middle line, the hand of the operator keeping as close as possible to this membrane, which will drag the ureter into the wound, so intimate is the attachment between them. It is not necessary to use a hemostatic forceps or retractor in following the line of cleavage, which leads straight to the ureter, and in this way exposes it from the brim of the pelvis to the bladder.

With the tube between the thumb and first finger of the left hand it is a simple matter to follow its entire pelvic course, and thus locate a stone embedded in it. This has been accomplished in a patient who was so fat that no portion of the tube lying at the bottom of a deep wound could at any time be seen.

The stone is tightly held between the thumb and first finger of the left hand; the wall of the ureter, which is stretched over the same, is nicked with the point of a sharp knife, and the stone squeezed through the tiny opening, which stretches to accommodate its passage. The first time this is

done the operator will be astonished at the ease with which the stone finds its way out of its resting-place into the grasp of the thumb and finger, it not being necessary to introduce the other hand or any grasping instrument into the wound.

No stitches are taken in the ureter—in fact the tiny wound is never seen at all. A fine cigarette drain is carried down to the vicinity and the abdomen closed except at the lower angle.

The odor of urine was never detected on the dressings of any one of four patients operated upon, though the stones removed varied in size from a number-six shot to the smallest marble. The drain has always been removed on the fifth or sixth day; the healing has been complete a few days later; and all of the patients have been up and perfectly well within two weeks.

This method makes possible three most desirable objects, viz., the use of a small abdominal incision, since the work is performed by the aid of touch alone; a minimum of injury to the ureter, since the stone is squeezed through an opening smaller than itself; a short, simple operation, since no closure of the tiny ureteral wound is required.

THE TREATMENT OF OPHTHALMIA NEONATORUM.

CRAIN (*Surgery, Gynecology, and Obstetrics*, vol. v, No. 2) states, in reference to the prophylactic treatment of ophthalmia neonatorum, that in his experience a number of cases of this disease will inevitably occur no matter what treatment is employed. In five methods of prophylactic treatment the smallest number of cases of ophthalmia in 1000 confinements has been 17, the largest 34. The objects in prophylactic treatment are to reduce the number of cases and to permit the disease to do as little damage as possible when it does occur. The best way to prevent the disease is, immediately after birth, to cleanse the eye from the discharges with a bland solution and then instil into it a disinfecting solution.

The method of cleansing the eye is to

flush it from the inner to the outer canthus with boric acid solution by means of a medicine dropper, the outer surface of the lids being then bathed in the same direction with the same solution.

It is commonly conceded that some salt of silver is best adapted for instillation. The author has used five solutions, with the following results:

Series I. In 1000 confinements 2-percent nitrate of silver solution: Cases of ophthalmia 18; eyes lost none; opacities none.

Series II. In 1000 confinements 1-percent nitrate of silver solution: Cases of ophthalmia 34; eyes lost 1; opacities none.

Series III. In 2000 confinements 5-percent protargol solution: Cases of ophthalmia 53; average per thousand 26 plus; eyes lost 1; opacities 1.

Series IV. In 2000 confinements 10-percent argyrol solution: Cases of ophthalmia 34; average per thousand 17; eyes lost 1; opacities 2.

Series V. In 2000 confinements 20-percent argyrol solution: Cases of ophthalmia 43; average per thousand 21 plus; eyes lost none; opacities none.

In the curative treatment of ophthalmia neonatorum the writer has found argyrol of great value. His method consists of frequent irrigations of the eye with boric acid solutions, cold compresses, and instillations of argyrol every two to four hours. It seems wise in severe cases which resist the treatment by argyrol to make occasional use of nitrate of silver 1 to 2 per cent. The use of all silver compounds, even argyrol, may be continued too long, and discontinuing the silver solution and using only boric acid solution may bring about a speedy recovery.

SCOPOLAMINE-MORPHINE ANESTHESIA IN OBSTETRICS.

NEWELL (*Surgery, Gynecology, and Obstetrics*, vol. v, No. 2) uses as the basis of his report an additional series of 123 obstetrical cases in which scopolamine-morphine anesthesia has been used in private practice and at the Boston Lying-in Hos-

pital. The routine of administration carried out is as follows: A solution containing 1/10 grain of Merck's scopolamine hydrobromide and 2½ grains of sulphate of morphine was prepared at least every fourth day—oftener if a sufficient number of patients were treated to render it necessary. As soon as labor became active, practically when contractions occurred at five-minute intervals, an initial dose, containing 1/150 grain of scopolamine and 1/6 grain of morphine, was given hypodermically. This was repeated at the end of from one to two hours, unless the patient showed marked reaction to the initial dose. In case marked reaction developed, the dose was not repeated until the effects of the drug began to disappear. In no case was the dose repeated after the cervix became two-thirds dilated, it being considered best to avoid the possibility of allowing the action of the drug to continue after delivery had taken place.

In reference to the results the author states that of the patients who received one or more doses of scopolamine-morphine, 112 out of 123 reacted favorably to the drug, and since in four of those who showed no reaction an old solution had been used, to test its efficiency, it seems fair to assume that the effect of the drug can be definitely counted on except in occasional patients.

Of the 123 cases in which the effect of the anesthetic on the pain suffered during labor was carefully charted, it was found that 17 patients stated that labor was practically painless; 70 suffered only slight discomfort; 19 dozed during the intervals, but complained of pain, although not excessively, when the uterine contractions occurred, and may well be included under the patients who experienced marked relief. Six patients apparently experienced no relief from pain, but slept during the intervals between contractions. Eleven of the patients showed no effect. In other words, in 112 out of 123 patients labor was made distinctly easier by the use of the drug, and in four of the failures an old solution was employed.

In those patients who reacted markedly

to the drug there was no clear recollection of pain suffered, as the perception of pain was practically abolished. In those patients in whom the pain was complained of during labor recollection of the pain suffered was more or less clouded, except among those on whom the drug was reported as having no effect.

Labor seems to have been definitely shortened in the majority of cases. Since, however, there was no means, except the patient's statement, of knowing when labor really began it was impossible to tell how much effect on the length of labor was really produced. In 71 primiparæ the average length of labor was fifteen hours, but since no patients were admitted to the hospital until labor was actually in progress, the true length of active labor could not be learned.

THE OPERATIVE TREATMENT OF SUBDELTOID BURSITIS.

BAER (*Bulletin of the Johns Hopkins Hospital*, vol. xviii, Nos. 195-196) reports four cases of subdeltoid bursitis operated upon by him with perfect results in three of the cases, and a result as good as could be expected in the fourth case, considering that it was complicated by fracture of the greater tuberosity of the humerus. In acute cases the treatment consists in the reduction of the swelling of the bursa and relief of pain by the application of ice-bags or the use of counter-irritants such as the Paquelin cautery or hot air. If the inflammation is of a rheumatic origin the salicylates or aspirin are of value. The arm should be put at rest to prevent traumatism of the bursa. In the more chronic cases the treatment should consist of complete excision of the bursa, such as carried out in the cases reported.

An incision of small extent should be made parallel to the long axis of the humerus midway between the coracoid and acromial processes. The fibers of the deltoid should be separated, and the subdeltoid bursa thus uncovered. This should be dissected out and removed in its entirety. If the walls of the bursa are at all thickened

this is easily done, but if the walls are normal the sac is so thin that one is liable to overlook it. After the sac has been excised the arm should be put through all its motions, which one can then do without fear of untoward results. The deltoid muscle is brought together with fine black silk, and the skin is sewn with an intracutaneous suture of silver. The arm should then be put up in a Velpeau bandage and dressed on the seventh day. The arm is then entirely freed and the patient allowed to use it at will.

The advantages which the operative treatment affords are as follows: There is no fear of damage from tearing the adhesions, or rupturing the vessels, for all adhesions are removed *in situ* before the manipulations are commenced. The bursal walls cannot readhere, for they have been removed. The position at which the arm is placed at the side of the patient is most comfortable. The patient is saved a long course of passive motions and massage, which is very trying, and can return to work with full motion and painless use of the arm in from two to three weeks.

THE IDEAL LIGATURE.

WHITING (*New York Medical Journal*, vol. lxxxvi, No. 11) gives a history of the use of the ligature and details experiments which he has made in the preparation of catgut.

His experiments show that the gut prepared according to his method is not merely antiseptic gut, but has germicidal powers. The chemical used in this method is silver iodide.

Catgut treated before it is twisted is much stronger than catgut sterilized after it has been made into a solid cord or string.

It is possible to thoroughly impregnate the untwisted gut with a chemical which will become a component part of the catgut when twisted.

Silver iodide gut will remain sterile as long as it is retained in the living tissues, and will possess germicidal powers until it has been absorbed or replaced by living

cells, the fluids of the body breaking up the silver iodide into silver, iodine, and various compounds of these chemicals.

In conclusion Whiting says that it is possible and practicable to produce catgut that is absolutely free from germ life, and that has antiseptic and germicidal powers, by treating the gut with various chemicals before it is twisted into a solid string or cord.

THE PERMANENCE OF THE RESULTS OF OPERATIVE TREATMENT OF LUXATION OF THE INTERARTICULAR CARTILAGES OF THE KNEE-JOINT.

MARTINA (*Deutsche Zeitschrift für Chirurgie*, Bd. lxxxviii, H. 4-6) collects from the literature the results of operation for luxation of the semilunar cartilages of the knee-joint, and reports two cases of his own. From these he draws conclusions.

In persons who had a sedentary occupation or were able to take good care of themselves complete cure occurred. The slight atrophy of the thigh muscles which persisted did not prejudice the results. It was different if the limb which had been operated upon was used to an unusual degree. Almost invariably defects were reestablished in those who followed their previous occupation, as that of laborer or soldier, or who, because of some uncontrolled impulse, as in hunting or games, placed great strain upon their lower limbs. In general the results of operative treatment were dependent chiefly upon the use to which the injured member was put. Power to do military duty was lost, while ability to engage in civil pursuits was retained. In spite of this the operation was justified because it lessened considerably the degree of disability, produced changes in the joint which favored restitution, and gave again to the affected person a limb useful for moderate work.

In all cases one should guard himself against drawing a hasty conclusion in reference to the full restoration of the function of the joint. Often one is strengthened in an optimistic view by patients who are impatient to resume their work and who ex-

press themselves as being very well satisfied with the power they have of using the limb. Soon after resuming their occupation, or perhaps not until months later, defects come on, with increasing demands upon the injured joint. At first these are slight, but later become so marked that the person, on account of frequent relapses, can follow his occupation to only a limited extent.

If one compares the results of operative treatment with those of conservative treatment, the former is to be unqualifiedly preferred to the latter on the grounds of adaptability and the certainty of the result; nevertheless the operation is not capable of entirely and permanently removing all previously existing disturbances in the mechanism of the joint. These will, however, remain latent if only moderate demands are made upon the joint. Otherwise they will become serious and bring on more or less outspoken invalidism. This must be taken into consideration in making a prognosis. An ideally functioning joint is, on anatomical grounds, not to be expected.

DERANGEMENT OF THE KNEE-JOINT, WITH ESPECIAL REFERENCE TO INJURIES OF THE SEMILUNAR CARTILAGES.

KÖNIG (*Deutsche Zeitschrift für Chirurgie*, Bd. lxxxviii, H. 4-6) says that in all joints of the human body severe disturbances occur as a result of violence without the production of a gross lesion, such as dislocation or fracture. These disorders are comparable to the impairment of the mechanism of a clock by the breaking of a wheel or the presence of a foreign body in the works. No joint is so favored on account of its size and anatomical form, nor, on the other hand, so exposed to traumatic disturbances on account of the demands made upon its strength, as is the knee-joint. As the German language has no suitable word to describe the condition referred to, the author adopts the French word "dé-rangement," and confines its meaning to those disturbances, appearing as a result of violence, having an anatomically demon-

strable basis in the sense of the foreign body in the clock, and does not include fracture or dislocation, or nervous, muscular, or other conditions lying outside of the joint. Such injuries are brought about by direct violence upon the knee through a fall, jolt, blow, etc. The joint is injured by pressure of the articular surfaces against each other, as by a jump or fall upon the feet with the knee-joint extended; or by excess of motion in the normal direction, as in bending or extending the leg; or through inward or outward torsion. The lesions which are evoked in this way are the following: Small pieces of the cartilage-encrusted articular ends of the bone are loosened and pushed permanently or temporarily into abnormal positions in the joint; the subserous fat-cushion, especially at the sides of the ligamentum patellæ or the anterior part of the thigh, is lacerated, and larger or smaller fat tumors, thus formed, interpose themselves between the joint ends of the bones. In rare cases strands or projections form in the joint cavity through tearing or destruction of the capsule or ligaments. Very commonly the interarticular cartilages, through injury, become disturbing foreign bodies.

The author has done altogether fourteen operations on account of the symptoms and physical signs of *dérangement*. The inner meniscus is injured oftener than the outer, in the ratio of 9 to 5.

There appeared, as a rule, in these injuries to the joint both local and general joint swelling. The general swelling was due to effusion into the joint; the local swelling in the region of the joint cleft was due to the displaced cartilage. There was also tenderness to pressure. Often the deformed cartilage could be made to emerge from the joint cleft by a definite motion of the limb, as bending. As a rule there was creaking in the joint on motion, and in one case motion of the joint resulted in transitory fixation. Sometimes a subcutaneous blood effusion showed itself after several days. Pain was usually marked, and some cases were subject to sharp attacks of pain of a neuralgic character. There was de-

fective flexion and extension and atrophy of the extensor muscles.

The following case record is given as a type: A printer, aged twenty-one, fell two years previously, while at gymnastic exercise, upon his heels with the limbs extended. In spite of the pain he continued the performance. The knee was swollen and was treated by massage for six months. One and a half years later he slipped and twisted the injured knee inward. On account of the aggravation of the condition thus caused he went to the hospital, where he remained two and a half weeks, but a short time after leaving the hospital returned on account of creaking in the knee. He was a strong, healthy man, and walked well, but somewhat cautiously; motion in right knee normal; knee somewhat thicker, especially between the patella and the internal lateral ligament, where there was a broad, flat prominence, in form resembling the meniscus. This was painful on motion and palpation, and there was creaking in the joint on motion. The movement of the joint was painful.

Operation: Oblique incision over the prominence; splitting of the capsule. The cartilage, which was dislocated outward and forward, was seized with forceps and 3 centimeters of the free part removed. This was found to be thickened and its surface covered with flat protuberances and scars; otherwise the joint was sound. The part removed comprised about half the internal meniscus. The wound in the capsule was sutured with catgut and the limb put in a Volkman splint. Twenty-four days later after an aseptic course the patient was discharged cured and walking well.

In the treatment as well as in the consideration of the anatomical and clinical findings it is desirable to separate the recent from the chronic injuries, for the former are not as a rule treated by operation, although they will probably require operation if the contusion of the cartilage is severe or there is well-marked detachment from the tibia. If this is not the case, then in recent injuries dependence must be placed upon rest of the limb so that healing

may not be disturbed by movements of the joint. Since the blood effusion disappears more quickly by massage it is perhaps wiser not to put on a plaster cast at once; or, if this is done, the cast should be split so that the limb may be taken out for careful massage and light motion. This treatment must be kept up for about six weeks, and for a time after this only slight motion should be permitted. In recent cases, when the dislocation of the cartilage is marked one should first try to replace it by simple finger pressure. If this does not succeed the leg should be pulled upon and the joint moved in various directions. If these efforts do not succeed one must consider immediate operation. It may be sufficient at first to replace the cartilage, if it is not severely lacerated, and stitch it in place by sutures passed through the capsule close to the femur and the tibia. Later, if it is seen that the result is not satisfactory, it is easy to extirpate the luxated part of the cartilage.

In the chronic cases the movements of the injured joint push the loosened portion into the joint, where it becomes hemmed in and its form changed into a ropelike structure with an uneven surface. Thus it becomes a foreign body, and not only impairs the motion of the joint but causes severe pain. These conditions can be remedied only by removal of the deformed cartilage.

In the eight cases operated upon on account of injuries to the internal meniscus no attacks of neuralgic pain returned. Only one case was entirely freed from symptoms of joint trouble. In the others there remained partial defect in motion, especially in extension, though relatively slight. Hill-, step-, and ladder-climbing were difficult in most cases. All suffered more or less pain, partly as a result of undue use of the joint, partly spontaneously, and especially in certain kinds of weather. All could use their limbs without disturbing lameness; all remained free from the sharp shooting pains which had rendered the joint temporarily or permanently powerless. One was compelled to change his occupation.

It is a matter of indifference whether part or all of the cartilage is removed. The operation is done, as a rule, upon the bloodless joint by a lateral longitudinal incision parallel to the edge of the patella. The skin and fascia are cut through and the capsule opened at the level of the meniscus. The lips of the wound are held apart by hooks, and the region of the injury is thrown into relief by pulling upon the leg and at the same time bending the knee. When the injured part has disappeared into the joint search must be made for it; this is made easier by means of a small electric speculum. The cartilage is seized by means of long, slender forceps or a hook, and the injured part removed with slender scissors curved on the flat. The case is most difficult of operation when the injury is at the posterior part of the meniscus. The wound is then sewed up, except that in most cases a small gauze drain is inserted in order to obviate the collection of blood in the joint.

LAXATIVES AFTER LAPAROTOMY.

BYFORD (*Surgery, Gynecology, and Obstetrics*, vol. v, No. 2) states that he gives laxatives after laparotomy as soon as the patient can take them, in order to restore through-and-through peristalsis, and continues them later as necessary in order to secure daily evacuation of the bowels. The plan which the author finds most satisfactory is to give two drachms of cascara two hours before operation and an ounce of Hunyadi water every hour after the patient wakes from the anesthetic until the bowels move and flatus is passed freely. If there is no voluntary movement within twelve hours after the operation, a high enema of 3 ounces of glycerin and 3 ounces of water is administered every two or three hours according to emergency.

If Hunyadi is not well borne, a teaspoonful of granular effervescent citrate of magnesia or two ounces of the liquid citrate are given. Postoperative water famine is provided against by making free water-drinking a part of the preparatory treatment. If flatus does not pass freely at the

end of twenty-four hours, or if there is no evidence of active peristalsis, an ounce of spirit of turpentine is added to the enema. Neither bowel movements nor the expulsion of gas which result from enemata are taken as proof of through-and-through peristalsis, but the laxatives and enemas are continued until flatus passes freely between enemas. After this 2 to 3 ounces of Hunyadi are given night and morning until it is no longer needed to create daily evacuations. If there is much postoperative pain an ice-bag should be applied to the abdomen and an enema containing about 30 grains of chloral given, which will usually alleviate the trouble without inhibiting peristalsis. Opiates are avoided.

PROPHYLAXIS OF VENEREAL DISEASES FROM THE STANDPOINT OF THE GYNECOLOGIST.

CLEVELAND (*Surgery, Gynecology, and Obstetrics*, vol. v, No. 2), in discussing the subject of prophylaxis of venereal disease from the view-point of the gynecologist, states that all general hospitals must be persuaded to receive acute cases of venereal disease and greater dispensary facilities must be established. The conclusion that at present legislation would be of little avail seems to be fairly general. The regulation of prostitution has not been attempted in this country because of the popular opposition to the licensing of such practices, and, moreover, its regulation in those countries in which this has been attempted has not succeeded, chiefly because the so-called private or clandestine prostitutes outnumber the public a hundred to one. Also, men who are spreading the disease to a greater extent than the prostitutes cannot be reached at all.

It is not expected that syphilis and gonorrhea can be entirely eliminated, but they can be checked and held in abeyance; marriage can be protected and blindness from gonorrheal infection can be eradicated. This is to be accomplished chiefly by education of the public. It is considered most important that all medical schools should

pay greater attention to instruction in venereal diseases and their consequences. Colleges, seminaries, and other schools should have in their curricula courses upon sexual physiology and hygiene. Teaching through the medium of university settlements, church settlements and various charity organizations can do a vast amount of good. Although boards of health are entirely inactive concerning this question, they have a vast amount of machinery which could be made available for help. They could be of the greatest aid in distributing information in the way of literature upon this subject. The medical secret prevents the reporting of venereal diseases, but physicians could be required to report these diseases with dates, without giving the names of the patients, and the board of health could tabulate and publish them. This would do away with all objection upon the part of the public, would be of immense advantage to scientific research, and of the greatest help in determining the approximate prevalence of these diseases.

Parents should begin early in the home instruction of their children in reference to sexual matters. If this instruction is not carried out, children grow up with erroneous ideas regarding the sexual apparatus, the sensual predominating. The fundamental facts of the physiology and pathology of the generative organs is all that the parent needs to know to bring up the child safely. The chief sources of prostitution are the laboring classes, factories and shops supplying the largest quota. The young women of these classes should be instructed in these matters if they are to protect themselves and preserve their purity. There should not be two standards of morality, one for men and one for women. It should be insisted that there are no facts to sustain the claim that sexual indulgence is a necessity for men any more than it is for women. It would not be going too far for the parent to demand that a young man should furnish a certificate of freedom from venereal disease from a reputable physician before giving his consent to the marriage of his daughter.

THERAPEUTIC RESULTS, ESPECIALLY FROM SERUM-THERAPY IN TETANUS.

FRICKER (*Deutsche Zeitschrift für Chirurgie*, Bd. 88, H. 4-6) reviews the literature of the therapeutics of tetanus both before and after the advent of antitoxic serum, reports at length forty cases treated, and gives a summary of the results.

Of the forty cases reported, eighteen were treated prior to the introduction of serum and twenty-two with serum combined with other measures. Of the former series fourteen were males, twelve of whom died and two recovered, and four were females, all of whom died. The treatment was almost purely symptomatic. A local treatment of the wound through which the infection had occurred, with thorough cleansing, disinfection, and, in a few cases, excision, was carried out. In only two cases was the wound excised, and then insufficiently, so that there is no complete excision in this series of cases from which an inference may be drawn as to the effect of such procedure. In one case amputation was done, but only as a last resort, when the symptom-complex of virulent tetanus was already fully developed. None the less the case improved in an extraordinary manner: the trismus abated, the muscles relaxed, and the convulsive attacks almost ceased for three days. The germs, however, had in this case been concealed in the lymph glands and lymph vessels, and gave rise to a renewed production of toxin which brought on a fatal result. Notwithstanding the unfavorable termination, this extraordinary mitigation of the symptoms following the radical surgical measures speaks for the therapeutic value of such procedure.

Against the convulsions, which constitute the real danger in tetanus, chloral, opium, and morphine were used. These reduce the irritability and contraction of the muscles and counteract the sleeplessness which is so characteristic of tetanus. If, in spite of this treatment, the convulsions were strong and frequent, then chloroform narcosis was resorted to with good results.

The strength of the patient was maintained by sufficient nutrition. In cases in which the throat muscles were affected nutrient enemata were given. The patients were isolated, unnecessary manipulation was avoided, and they were at no time left alone when in a convulsive attack.

Of the twenty-two cases treated by serum, together with other measures, twenty were males, of whom twelve died and eight recovered, and two were females, both of whom recovered. The treatment was both local and general. In ten cases, seven of which died and three of which got well, the wound was disinfected immediately after admission. In fourteen cases, eight of which died and six of which recovered, the site of infection was cut out and foreign bodies were removed, and at the same time serum treatment was begun. This excision was in most of these cases extended as far as practicable into the healthy tissues. It was at all events more extended and radical than in the series which were not treated with serum, and it is believed that this thorough excision played an important part in the results. As long as a residue of tetanus germs is able constantly to bring a quantity of newly formed toxin into the organism, the serum treatment will have to be of long duration even if the serum has the curative value which von Behring claims for it.

The author concedes to energetic local treatment a prime place even if he would at the same time use the serum treatment. In how far the local treatment or the serum influenced the favorable course it is difficult to decide. In none of the cases could an exceptional improvement be observed upon the introduction of the antitoxin; the symptoms abated gradually. The toxins which are already lodged in the nervous system are not at all influenced by the serum, the sole effect of the treatment being to prevent the lodgment of new masses of toxin.

Twelve cases remained uninfluenced throughout the treatment. These were mostly desperate cases and already far advanced. Besides the serum were given,

when convulsive attacks were present, narcotics, as chloral by the mouth or by enema, and morphine subcutaneously. Washing out of the body by intravenous injection of salt solution was carried out in eight cases, five of which died. In one case the patient was first bled, but in the others the salt solution was incorporated directly with the intravenous serum injection. In other cases the serum was given subcutaneously. The administration of serum was repeated from one to eleven times, depending upon the course of the disease, and on successive days, or twice on the same day. The dose was increased as the treatment progressed.

The patients were isolated and sufficient nourishment was provided, eventually by enema.

Of the total number treated without serum sixteen died, a percentage of 88.8; of those treated with serum ten died, a percentage of 45.5. In the second series there was a greater number of mild or moderately severe cases than in the first. The local treatment was in the individuals of the second series much more radical and timely.

Those who are enthusiastic over serum-therapy will not permit any strictures. The naked figures are proof enough for them. In the critical examination of the course of tetanus the naked statistics are worthless. All depends upon the individual observation. The author further states that he will continue to use the antitoxic serum because an unfavorable experience does not speak against the possibility of its advantages, but in the future as in the past he will accord to local therapy an important and leading place.

The conclusions of the author from his observation of forty cases are as follows: In determining the prognosis, besides the incubation period and the malignancy of the infection, one must take into consideration an individual disposition for the rapid and firm fastening of the toxin upon the nervous system. Difficulties in swallowing coming on early in the disease or in virulent cases are of unfavorable prognostic import. In cases with brief incubation

period death often comes much later than in cases with longer incubation period. The serum injections appear to modify the result and the course, but remarkably so only when the whole or at least the principal part of the infectious material was removed operatively by excision or amputation. Therefore, in no case should local treatment at the site of infection be omitted. The serum injections have not the power to replace the narcotics in their influence. Whether operative removal of the infectious material and symptomatic treatment with narcotics alone are able to influence the course of the disease cannot be decided by the cases at hand, for in the cases treated symptomatically an excision was done in only three instances, and then insufficiently. A wandering of the bacilli of tetanus from the wound out through the lymph channels into the neighboring lymph glands appears to be no rare occurrence.

TREATMENT OF GONORRHEAL ARTHRITIS BY VACCINES.

COLE and MEAKINS (*Bulletin of the Johns Hopkins Hospital*, vol. xviii, Nos. 195-196) report upon the treatment of gonorrheal arthritis by means of vaccination. The technique employed in the estimation of the opsonic index was as nearly as possible that described by Wright. The strains of gonococci were derived from two sources, one from the knee-joint in a severe case of gonorrheal arthritis with effusion, and the other from a case of gonorrheal periostitis. Comparison of the two strains did not reveal any appreciable difference. It is advisable, however, to use an organism isolated from the case under treatment, but this presents such difficulties as to be at times quite impossible. The strength of each vaccine was usually six hundred million gonococci in one cubic centimeter.

In carrying out the treatment the opsonic index was first determined, and, if below normal, the first dose of vaccine was given. This was usually three hundred million gonococci. The dose of vaccine was increased gradually until one thousand mil-

lion at one dose were used. No ill effects were encountered even when twelve hundred million were used at one dose. A slight local reaction always occurred twelve to twenty-four hours after the first dose. In one case the patient suffered from forty-eight to seventy-two hours after the operation with marked pain and induration at the site of the arthritis. This occurred after subsequent injections, but the reaction diminished in severity with each subsequent dose. After the last injection no reaction occurred.

General constitutional disturbances following the injections were very rare. In only one case can this be said to have occurred. There was sudden rise of temperature with general malaise the evening after the second injection, but recovery was complete within twenty-four hours and no further general disturbance was noted. As a rule there is a sudden ascent in the opsonic index after the vaccination with a gradual descent. In some cases this was reversed.

The number of vaccinations varied from one to eight. The intervals between the injections were controlled by the opsonic index, though in most cases the intervals were from seven to ten days. In none of the cases was the negative phase at all marked, and a cumulative negative phase was never observed. Fifteen cases of gonorrheal arthritis treated by vaccination are reported in detail. The ages vary from nineteen to forty-six years. Four were females and eleven males; the duration of illness varied from two weeks to eighteen months. The time of treatment varied from nine to seventy days. The longest time was in a case which had persisted eighteen months before treatment was begun. The time required for treatment appears in a general way to be proportional to the duration of the illness. The patients as a rule returned to work at the time the treatment was discontinued.

Although the authors realize the difficulty of drawing conclusions from these cases they are of the impression that the vaccine treatment as carried out has been of distinct value and that they are justified

in continuing its use. It hardly seems advisable that control of the administration of vaccine by the estimation of the opsonic index should be persisted in. The danger of cumulative negative phases is not considered a real one. The authors have omitted so far as possible all other forms of treatment, as they wished to test the vaccine alone. There is no reason, however, why vaccine treatment should not be combined with whatever other form of treatment may be considered advisable.

COAGULATION TIME OF THE BLOOD.

'HINMAN and SLADEN (*Bulletin of the Johns Hopkins Hospital*, vol. xviii, Nos. 195 and 196) give a detailed report of their experiments with the various methods of testing the coagulability of the blood. Out of 251 cases tested by Boggs's modification of the Brodie-Russell method, 163 cases have coagulation times below 8 minutes, and although more than half the series are pathological cases, there are only 88 with times above 8 minutes. Ninety-seven had times of 11 minutes or above. The longest time in the series is 33 minutes. Leaving out these 37 cases the remaining 214 cases have an average time of 6 minutes and 40 seconds. Records below 7 to 8 minutes are normal, while coagulation periods passing this period are proportionately delayed. A series of cases tested by Milian's slide method shows times which correspond very closely to the Boggs method. The Milian slide method is quick, convenient, thoroughly reliable, and can be used in the laboratory or sick-room. The only apparatus needed is a clean slide and a millimeter scale. The chief objection is the exposure and the consequent evaporation. This has little effect in cases in which the time is within normal limit. For pathological cases tested it was found that in jaundice due to cholelithiasis the times ranged from $5\frac{1}{2}$ to $12\frac{1}{2}$ minutes, with an average of 8 minutes. In jaundice due to malignant disease the time limits were 9 to $20\frac{1}{2}$ minutes; with an average of $13\frac{1}{4}$ minutes. In the primary anemias no mark-

edly delayed time was found. Many cases of aneurism were tested, but in none of them were delayed times found. By the administration of calcium salts the coagulation time in aneurism was reduced from $7\frac{1}{2}$ to 3 minutes. Before calcium is given the coagulation time should be measured, and if it is found delayed calcium is indicated. The lactate is the best salt. The chloride is too irritating. A good way to give it is in suspension in simple syrup, or the powder or capsule may be used. A solution of the chloride in normal salt may be used for infusion intraperitoneally or intravenously, but subcutaneously it may cause great sloughing.

When given too long its effect wears off and the time returns to what it had been previously. In only one case was there a possibility that the calcium lengthened the coagulation time to more than it had been before it was given. Calcium can maintain the increase in coagulability only about three to five days. In order to reduce a delayed coagulation time and maintain it as such it is better to begin with a small dose, as 10 grains four times during the day. Daily determinations are made, and when the coagulation time is again becoming delayed increase the dose to 20 grains every four hours, then to 30 and 40 grains. Then three to five days are allowed to elapse without the administration of any calcium, when a new course is begun.

ADENOIDS AND ADENOID TUBERCULOSIS.

E. HAMILTON WHITE (*American Journal of the Medical Sciences*, vol. cxxxiv, No. 2) concludes a paper upon this subject with the following observations:

Primary tuberculosis occurs in a certain proportion of all cases of adenoids. From the figures of other observers and the author's this seems to be about five per cent. This is regarded as a conservative estimate.

In determining the presence of adenoid tuberculosis the histological method is the most satisfactory.

Tuberculosis does not appear to be an important factor in the production of adenoid hypertrophy.

Adenoids and tonsils are the important channels of infection in tuberculosis of the cervical glands.

In the development of pulmonary tuberculosis adenoids may sometimes be direct channels of infection, but their importance is probably more often indirect by predisposing to catarrhal inflammations of the upper respiratory tract.

APPENDICITIS COMPLICATING PUERPERIUM.

HILTON (*Surgery, Gynecology, and Obstetrics*, vol. v, No. 4) observes that a great portion of the cases of actual appendicitis have been overlooked since the whole condition is masked by the peculiar periapendicular conditions and the symptom-complex, incident to childbirth and the puerperium. He states that in all there are twenty-nine reported cases having their inception during the puerperium. Of these twenty-two began within ten days following full-term delivery, and one within the same interval following abortion. Six cases occurred from twenty days to eight weeks after labor. Aside from these twenty-nine cases there are a few reported as appendicitis during the puerperium that had their beginning during the parturient act. Over two-thirds, or twenty-one cases, developed during the first four days.

The prognosis of appendicitis occurring at this time seems grave. Of twenty-two cases developing within ten days following labor, ten died, a mortality of 45.5 per cent. Of the total twenty-three cases reported as developing within ten days following labor, sixteen or 70 per cent were of a suppurative or of a perforative type.

As to treatment, early surgical interference is the rational procedure offering the best outlook for these cases. High mortality in operative cases was among those which had been allowed to pass on to suppuration and perforation.

REVIEWS.

DISEASES OF THE HEART. By Prof. Th. von Jürgensen, of Tübingen; Prof. Dr. L. Krehl, of Greifswald; and Prof. Dr. L. von Schrötter, of Vienna. Edited, with additions, by George Dock, M.D. W. B. Saunders Company, Philadelphia, 1908. Price \$5.00.

This is one of the series of volumes comprising Nothnagel's Practice. A number of these volumes have already appeared and have been well received by the profession, because they have been prepared in Germany by men who are recognized authorities, and have been revised and edited in this country by men who were well selected for the performance of their office. The present volume contains nearly 900 pages, and is perhaps the most exhaustive single volume dealing with diseases of the heart that exists in the English language, being far larger than the classical book of Broadbent for example. The opening chapter deals with insufficiency or weakness of the heart, and covers 125 pages. The second chapter is upon endocarditis and covers a little over 100 pages; that on valvular disease covers 115 pages; and the remainder of the book, or about one-half, deals with diseases of the myocardium and the nervous diseases of the heart and with diseases of the pericardium, the latter taking up only about 60 pages, so that about 350 pages are used in discussing diseases of the myocardium. It is this latter section upon diseases of the myocardium and the nervous diseases of the heart which should be perused most carefully by the physician and student of to-day, since although the diseases of the heart muscle and its blood-vessels and nerves have been recognized as of importance within the last few years much better than ever before, they still need graver study than they receive at the present time. Indeed, we fear that too many practitioners are prone to study the valvular lesions but pay too little attention to myocardial changes, first, because their importance is not recognized, and secondly, because it is difficult to be as positive concerning their nature and distribution as it is possible to be in connection with valvular lesions.

The editing of the present volume by Dr. Dock, has been well done. Sometimes it requires more skill to hold the hand than to use it, and this fact has been recognized by Dr. Dock, who tells us that he has found nothing that seemed necessary to omit, and in only one instance has he modified what seemed to him the meaning of the author in order to make the text more accurate and clear to the American reader. Dr. Dock has also made the medicinal preparations conform to those of the United States Pharmacopœia, so as to make the therapeutics which is recommended by the authors more readily applicable by American readers. We can cordially commend this volume as a most excellent presentation of the subject of cardiac diseases from every standpoint.

THE INTERNATIONAL CLINICS. A Quarterly of Illustrated Clinical Lectures and Original Articles Dealing with the Various Branches of Medicine. Edited by W. T. Longcope, M.D. The J. B. Lippincott Company, Philadelphia, 1907.

This volume (IV of the 17th Series of International Clinics) contains a very considerable number of articles of interest and importance. It opens with one by J. N. Henry, M.D., of Philadelphia, upon the Treatment of Tetanus by Intraspinal Injections of Magnesium Sulphate, with a report of four cases. This is followed by one upon the Value of the Roentgen Rays and Arsenic in the Treatment of Leukemia by A. S. Warthin, M.D., of Ann Arbor, Mich., and this in turn by one on the Treatment of Hemoptysis in Pulmonary Tuberculosis by A. P. Francine, of Philadelphia. There is also an article by Weil, of Paris, upon the Injection of Fresh Blood Serum in Blood States that Give Rise to Hemorrhage, and another by Chantemesse, of Paris, upon Five Years' Experience with Antityphoid Serum, an article which from its importance is one of the most interesting of the volume. There are a considerable number of articles upon Medicine, Surgery, Gynecology, Genito-urinary Diseases, Orthopedics, Neurology, and Otology in the same issue. The article by Dr. Henry K. Pancoast,

upon "Gastroptosis from the Radiographic Standpoint," we thought had appeared elsewhere, certainly the illustrations are familiar to us, but to those who have not seen them they possess great interest and importance. The present volume fully maintains the standard set by its predecessors.

DISEASES OF THE NOSE. By Ernest B. Waggett, M.A., M.B., B.C. Henry Frowde, Oxford University Press, 1907.

This small book upon this subject, which only contains twenty or twenty-one lines to the page and about ten words to the line, is intended to be read, as it was written, "rapidly from cover to cover," to use the author's words. The illustrations were, most of them, made from nature, by the author, and some of them are exceedingly crude, as on page 5. We confess that we cannot see any advantage in the publication of a volume of this kind. It was evidently hurriedly prepared, and is far too brief to present the important subject with which it deals in an adequate manner.

AIDS TO DENTAL SURGERY. By Arthur S. Underwood, M.R.C.S., L.D.S., and Douglass Gabell, M.R.C.S., L.D.S. Second Edition. William Wood & Co., New York, 1907. Price \$1.00.

This small pocket manual deals with the science of dental surgery in a very condensed form, there being only 126 duodecimo pages, including the index. Starting out with the bacteriology of the mouth, it proceeds from the hygiene and care of the teeth and mouth to the abnormalities of temporary and permanent dentition. It then discusses dental caries, diseases of the periosteum, the extraction of teeth, injuries and diseases of the jaws and of the teeth and gums. It is surprising how much information is given between its covers.

A MANUAL OF CLINICAL CHEMISTRY. By A. E. Austin, A.B., M.D. D. C. Heath & Company, Boston, 1907.

In his preface Dr. Austin points out that there are three classes of text-books in existence for the teaching of chemistry to medical students: First, the large encyclopedic medical chemistries; secondly, the so-called physiological chemistries, which are more adapted to academic than to medical education; and thirdly, a collection of excel-

lent books which give modern methods of analysis for clinical purposes. As it is often essential that a student should use all three of these books in order to obtain the information that he needs, Dr. Austin has attempted to cover them in one volume, combining the practical part of all three, and ignoring all that is not of direct benefit to the medical man. In an appendix all the reagents needed for the experiments named are given, with brief descriptions of the methods of making them. The book covers 271 small octavo pages, has already been well received, and is becoming more popular as it becomes better known.

DISEASES OF CHILDREN FOR NURSES. By Robert S. McCombs, M.D. W. B. Saunders Co., Philadelphia and London, 1907. Price \$2.00.

The object of this book is manifest from its title, which is based upon a series of lectures given to the nurses of the Children's Hospital, Philadelphia, one of the best institutions in this country in its line. Much of the information is taken from Stevens's "Manual of Medicine" and from Holt's "Infancy and Childhood." The book is well prepared and will prove useful to the class for which it is intended. Indeed, much of the information which is given will be found exceedingly useful by both old and young practitioners. Too little attention is paid in many text-books to the small details which are essential for successful practice by the physician and nurse. In this volume these small and exceedingly useful details can be readily found in profusion.

MORTMAIN. By Arthur Train. D. Appleton & Company, New York, 1907.

This is a novel written by an active practitioner of law in New York. The scene is chiefly laid in the city of New York, and the theme deals largely with the question of limb grafting, or the ability to replace or supplant a limb which has been removed by accident or otherwise. In other words, it is a novel with a distinctly medical flavor, and will without doubt prove of interest to a very considerable number of our readers who, on the one hand, wish to amuse themselves with something medical, and yet are desirous of resting after a day's work by reading fiction.

AIDS TO THE DIAGNOSIS AND TREATMENT OF DISEASES OF CHILDREN. By John McCaw, M.D. Third Edition. William Wood & Co., New York, 1907. Price \$1.25.

By means of small type and close printing a very large amount of information is included in this little volume. The first 10 pages are devoted to the anatomy and physiology of infancy and childhood; the next 14 to the hygiene and diet of infants and children; 32 pages suffice to cover injuries and diseases of the newly-born; 52 pages are devoted to diseases of the digestive system and related organs, and 56 to the specific fevers. Forty are given to diseases of the respiratory system, but only 12 to diseases of the circulatory apparatus. Fifty-one pages are used in a discussion of diseases of the nervous system, and the remaining 100 pages deal with diseases of the urinary system, general diseases, blood diseases in infancy and childhood, disease of the thyroid gland, and an appendix containing dietetic directions and methods of using antipyretics, emetics, and narcotics. The last few pages contain prescriptions which the author thinks advisable, and an index. The book is, of course, too brief to justify its use in place of the larger manuals, but it is an excellent one to be used in conjunction with them.

DISEASES OF THE LARYNX. By Harold Barwell, M.B., F.R.C.P. Henry Frowde, Oxford University Press, 1907.

The author states that he is glad to have the opportunity of writing this little treatise, because while there are several excellent works of larger size on the subject for the specialist, it has long seemed to him that a smaller manual of diseases of the larynx was needed for the use of the general practitioner and student. This may be true, but the present volume is far too brief to adequately discuss the subject of which it treats. The illustrations are far better than those which are found in the little book on diseases of the nose which we have already referred to, and what is said concerning the conditions discussed is accurate and correct. The volume closes with a number of prescriptions, which will perhaps prove more valuable to our readers than the rest of the text.

APPLIED PHYSIOLOGY. By Frederick A. Rhodes, M.D. The Medical Press, Pittsburg, Pa., 1907.

Dr. Rhodes, who is the Professor of Physiology and Embryology in the Medical and Dental Departments of the Western University of Pennsylvania, has prepared this little handbook in order to present to the students of medicine the physiological explanation of the important and frequent symptoms of disease. He starts out with a brief description of the physiology of the more important organs, and then attempts to give the physiological or pathological explanation of symptoms which are developed when the patient is ill. Thus, under the head of Heart Block or Stokes-Adams Disease he points out that the condition may be partial or complete, and that it may be of two kinds—one organic, due to a lesion in the bundle of His, or, secondly, the failure of the ventricle to follow all impulses of the auricle, due to overaction of the vagus. We think that the author has made an effort in the right direction, but regret that his text is sketchy, or, in other words, insufficiently developed.

HEART DISEASE AND THORACIC ANEURISM. By F. H. Poynton, M.D., F.R.C.P. London. Henry Frowde, Oxford University Press, 1907.

The fact that Dr. Poynton is one of the assistant physicians at University College Hospital and also a physician at the Great Ormond Street Hospital for Sick Children has given him large clinical advantages, and these he has utilized in the preparation of this small book, which is very well illustrated, and which is an adequate presentation of the subject of which it treats. Most of the illustrations are taken from other sources, but are well utilized and well executed. The part devoted to aneurism is unfortunately brief, particularly those portions which are devoted to the discussion of the pathology of the affection. So, too, in the discussion of the treatment of aortic aneurism, while considerable space is given to the use of gelatin, nothing is said concerning the advantages of the use of wire and electrolysis. The volume closes with a number of prescriptions which are useful in cardiac disease, and with some "diets" which are also of value in this class of cases.

SURGERY: ITS PRINCIPLES AND PRACTICE. By Various Authors. Edited by William Williams Keen, M.D., LL.D. Volume III, Illustrated. W. B. Saunders Company, Philadelphia and London, 1908.

The first section of the third volume of Surgery, devoted to Affections of the Head, by Harvey Cushing, is a most scholarly, satisfactory, and practical monograph upon the subject. There is a brief anatomical discussion of the external coverings and bones of the skull, with a consideration of their surgical affections. A convincing argument is made for early operation for the relief of intracranial hemorrhage incident to injury to the head of the new-born. The section devoted to the cerebral envelopes and their diseases is particularly to be commended. This may also be said of the admirable summary of the symptomatology of organic lesions of the brain. Concussion and physiological effects of compression are considered at length. Injuries and diseases of the cerebral blood-vessels, some sequelæ and injuries of the brain, and the technique of intracranial operations are subjects most excellently summarized.

Surgery of the Neck, by Wyllys Andrews, begins with a consideration of embryonal cysts and fistulæ, after which follow wry-neck, suppurative processes, cervical ribs, ligneous abscess of the neck, diseases of the glands and lymph vessels, a few paragraphs upon the carotid body, contusions and wounds, tumors, affections of the salivary glands, and operations upon the neck. In this last section Crile's methods and his admirable results are given in considerable detail. This chapter ends with a brief section upon the thymus gland.

Diseases of the Thyroid Gland, by Albert Kocher, include the anatomy, relations, and structure of this gland, together with its functions and those of the parathyroids. Thereafter follow functional diseases of these glands, goitre, acute thyroiditis, strumitis, syphilis and tuberculosis, malignant degeneration, and disease of the parathyroid gland.

This comparatively brief section covers the field in a satisfactory manner.

The section devoted to the Nose and Accessory Sinuses, by Harmon Smith, after

some pages devoted to the anatomy and the methods and instruments of examination, takes up the various abnormalities and diseases, with careful consideration of the methods of diagnosis and the technique of surgical treatment. The section is concluded by a discussion of Affections of the Nasopharynx, including malignant tumors.

Surgery of the Larynx and Trachea is written by George Emerson Brewer. He describes Killian's method of tracheoscopy and bronchoscopy and concludes his article with an excellent description of the most approved operations upon the larynx and trachea. To the same author has been allotted Surgery of the Thorax. In the portion of the chapter devoted to operations due mention is made of the Sauerbruch cabinet.

Surgery of the Breast, by Finney, is written from the standpoint of a widely experienced and observant surgeon who knows what his colleagues most desire from him. It is a paper with which every operative surgeon should be familiar.

Surgery of the Mouth, Teeth, and Jaws, by Edmund Owen, very satisfactorily summarizes the commonly accepted teachings.

Surgery of the Tongue, by J. Chalmers Da Costa, and Technique of Abdominal Surgery and Surgery of the Retroperitoneal Space, by John C. Munro, include all that is best and most modern on these subjects. The section on Peritonitis is especially to be commended.

Surgery of the Esophagus, by George Gottstein, is an excellent practical section on this subject.

Surgery of the Stomach, by Mayo Robson, is a truly admirable section marked by clear expression of individual views and by wise conservatism likely to be most helpful to those of lesser experience who are inclined to regard operation in some form as necessary in all intractable affections of the stomach. This same criticism applies with equal force to Surgery of the Liver, Gall-bladder, and Biliary Ducts by Charles H. Mayo, and Surgery of the Pancreas by B. G. A. Moynihan. Indeed, these three articles are models of logical arrangement, clear expression, and the practical application of

knowledge gained from a large clinical material keenly observed and skilfully treated.

This third volume makes both the surgeon and practitioner eager for the completion of this splendid work.

A MANUAL OF VENEREAL DISEASES. By Sir Alfred Keogh, K.C.B., Lieut.-Colonel C. H. Melville, R.A.M.C., Lieut.-Colonel Leishman, R.A.M.C., and Major C. E. Pollock, R.A.M.C. Hodder & Stoughton, London, England, 1907.

This manual is, according to the statement of its editor (Charles H. Melville), intended to act as a convenient primer for the use of the army medical officer, to assist him in his daily work in the prevention and treatment of venereal diseases. Nor is it in the least intended as an exhaustive treatise on these topics. It is based on the report of the subcommittee of the Army Medical Advisory Board, in which is to be found summarized an enormous amount of collected information and many useful recommendations. The teachings of the book are, of course, based upon the experience gained in the study of the material available in the British army.

Keogh, in his introduction, states that the chances of avoiding infection are in direct proportion to the extent to which cleanliness and personal hygiene are practiced by those who run the risk of infecting or of being infected. He notes that it is a significant fact that the two great Anglo-Saxon states, whose attitude in opposition to legislative control is similar, have a far higher incidence of venereal diseases in their armies than has any other country.

In the chapter devoted to Methods of Prevention there is an extremely valuable subsection summarizing the measures adopted for prophylaxis in armies, together with a comparison of the incidence of venereal disease in the European armies.

The second chapter is devoted to the definition and the pathology of Syphilis. The Spirochæta is considered the probable cause. Its staining and identification are elaborately described.

The chapter devoted to Diagnosis is particularly to be commended because of its sound common sense. As to treatment the

statement is definitely made that there is only one drug which possesses the power of curing syphilis, that consequently it is our sheet-anchor at any and every stage of the disease. This teaching cannot be too widely diffused. Although proven beyond controversy it is still accepted with reluctance by those with little experience. It is further stated that overtreatment is nearly as harmful as undertreatment, and that each case must be treated on its merits.

Treatment with mercury is advised as soon as the diagnosis of syphilis is made, if not before. It is further stated that if we adopt two years' treatment as the working rule the proportion of tertiary syphilis should not exceed five per cent of the number of those who contract syphilis, and that more than one-third of this percentage will not manifest symptoms until after the expiration of the soldier's contract with the state. Therefore the author holds that two years' treatment, if thoroughly carried out, fulfils professional obligation to the state. Preference as to the form of administration is by inunction supplemented by bath. The various other methods of introducing the drug are taken up in detail. As to the iodides, it is stated that these are in no sense a substitute for mercury even in the late stage of the disease, although they may be useful all through its course.

The chapter on Gonorrhea is an excellent one. Soft Chancre is treated briefly, diagnosis being based upon finding the Dühré bacillus.

This book is admirably designed not only for the army surgeon but for the general practitioner, and may be studied with profit by the specialist.

DISEASES OF THE MALE GENERATIVE ORGANS. By Edred M. Corner, M.A., M.B., B.Sc., M.C., F.R.C.S. Hodder & Stoughton, London, England, 1907.

Corner, believing that the divorce of diseases of the generative tract from those of the urinary tract would be a practical gain to the busy man, has compiled a book which, to the reviewer, would seem might prove a source of irritation rather than a fount of knowledge to him seeking help upon any genito-urinary topic.

The first chapter opens with Hydrocele of the Tunica Vaginalis. No preference is expressed in regard to treatment, though a brief space is given to tapping and injection of carbolized glycerin.

The second chapter is devoted to Physiology of the Testicle, and is singularly deficient in physiological information.

The third chapter is entitled the Wandering or Movable Testicle.

The fourth chapter, the Imperfectly Descended Testicle, is considered at length, but not in an illuminating way. To torsion of the testicle considerable space is given and some extremely interesting cases are reported. Epididymitis, orchitis, tuberculosis, cystic disease, dermoid cysts, are topics very lightly touched upon. In speaking of functional affections of the sexual organs Corner remarks that masturbation when practiced before puberty is most harmful, and not only to the mind and body but to the sexual glands, a teaching with which there will be general concurrence. He notes that practiced after puberty and without excess there is little reason to believe that harm results to the individual.

Infertility is considered very briefly. There is a short and somewhat obscure discussion of the relation of the individual to the sexual life. In disease of the spermatic cord the author justly accords greatest importance to varicocele, giving a most interesting summary of the immediate and remote results of the ordinary method of operative procedure.

Though this book does not cover any subject well, it has evidently been written by a man who has seen many clinical instances of the affections he describes, and hence necessarily contains suggestions of distinct value.

SURGICAL EMERGENCIES. By Percy Sargent, M.A., M.B., B.C. (Cantab.), F.R.C.S. Hodder & Stoughton, London, England, 1907.

This book is, the author states, in the nature of an essay based upon his experience gained during eight years' intimate association with the surgical side of St. Thomas's Hospital.

As is proper, hemorrhage receives the first consideration, and the local treatment

adopted for its checking is that which is practiced in the best clinics. The slow instillation of saline by the rectum could have been described with advantage in more detail, nor is the antitoxin syringe a good instrument for the introduction of the saline subcutaneously. The transfusion of blood is not mentioned. Nor are the indications for the use of one or another method clearly indicated.

For burrs and scalds the continuous bath treatment is recommended as the best, though saturated solution of picric acid receives high praise. In fracture of the patella operation is advised through a vertical incision, a method not in consonance with that usually practiced. To acute infective diseases is accorded a chapter, though the ordinary abscess can scarcely be considered a surgical emergency. Excision is advised as the best means of curing a carbuncle of moderate size. Similar treatment is in the author's opinion indicated in the treatment of cancrum oris.

Under the heading Acute Abdominal Diseases are classed those affections which require prompt surgical intervention. The surgeon is cautioned against the mistaking of lead poisoning, diarrhea with collapse, renal or biliary colic, basal pneumonia, and acute colitis for conditions which require immediate surgical intervention. This list might profitably be very greatly extended.

A large section of the book is devoted to acute abdominal affections and their surgical treatment. Respiratory obstruction is briefly considered, including under this heading respiratory difficulties under anesthesia.

The book closes with a section on the Acute Infections of the Urinary System, Acute Retention of the Urine, Urethritis, Prostatic Obstruction, Foreign Bodies in the Urethra, Extravasation of Urine, Acute Cystitis and Suppression of Urine—an excellent selection.

In addition there are chapters upon Traumatism, including Injuries and Diseases of the Ear and Eye.

This forms an excellent handbook for those who have not had the experience incident to a hospital appointment.

CORRESPONDENCE.

LONDON LETTER.

BY G. F. STILL, M.D., F.R.C.P.

The Royal Society of Medicine continues to show a vitality and vigor which are in pleasing contrast with the old order of things when valuable papers were read to empty benches. Sir Thomas Barlow is president of the Clinical Section, which seems to be particularly in favor. At a recent meeting Mr. Rickman Godlee showed two interesting cases of osteoarthritis affecting joints to which there had been injury in past years; he laid stress on this tendency to osteoarthritis in a part weakened by previous injury. Several speakers brought forward confirmatory evidence in the tendency shown by various diseases to affect parts whose resistance had been diminished by traumatism. Dr. F. J. Poynton, for example, mentioned the affection of an injured joint by the diplococcus of rheumatism when this microörganism was injected into the general circulation, and Dr. A. E. Garrod instanced the localization of a first attack of gout to a joint which had been subjected to traumatism years previously. The Therapeutic and Pharmacological Section, which was but a newly-born infant so to speak when it was absorbed into the Royal Society of Medicine, continues to do excellent work. Professor Cushny recently read a very interesting paper on nutmeg poisoning: this occurs from eating the crude nutmeg or mace, and the symptoms are chiefly nervous, drowsiness, stupor, delirium, giddiness, and pain in the stomach. It would have been valuable if information had been given as to the possibility of danger from the expressed oil of nutmeg which is sometimes used as a local application, for instance to cure alopecia. This section, which although part of the corporate body of the Royal Society has its own "local habitation" at the Apothecaries'

Hall, in Blackfriars, is to hold its annual conversazione this month, when Dr. Henry Campbell is to deliver an address on that *vetusta quæstio* the therapeutics of diet. There is also to be a lantern demonstration of color photography which should be good, for beautiful results are being obtained by some medical workers in London with three-color photography.

The annual lectures at the Royal College of Physicians begin next month. Dr. H. French has chosen as his theme for the Goulstonian lectures, the influence of pregnancy on certain medical diseases, and the influence of certain medical diseases on pregnancy. The Lumleian lectures are always given by one of the most senior fellows of the college, and this year the choice has fallen upon Sir James Sawyer, who was formerly Professor of Medicine in Queen's College, Birmingham, and whose writings on clinical medicine are well known as most practical contributions to the subject. Another well-known authority who is to lecture this year before the College of Physicians is the distinguished physiologist Professor Schäfer, who until a few years ago was Professor of Physiology at University College, London, but resigned this post to take the chair of physiology at Edinburgh. His subject is to be the present position of our knowledge regarding the suprarenal capsules.

An interesting departure is to be made in the establishment of a tuberculosis sanatorium for children at Harpenden, near London; in support of this a great meeting was held at the Mansion House a few days ago under the presidency of the Lord Mayor. The new institution is really an outgrowth of a certain Children's Home, in which it was found that almost 25 per cent of the children admitted were suffering with tuberculosis. Sir Douglas Powell, the president of the Royal College of Physicians, and Sir Thomas Barlow both spoke warmly in sup-

port of the proposal. The latter said that consumptive children are not so much affected in the lungs, the disease in them is principally abdominal; he does not think there is great risk of spread of the infection from children, for they swallow their sputum instead of expectorating it as an adult does. At the same time he admitted there is some risk, and therefore it is well that such children should be placed in a sanatorium away from the healthy children.

The question of the registration of nurses has been much discussed recently. A bill for such registration is now before the House of Commons. It cannot be said that the matter has been dealt with precipitately, for as Lady Helen Munro-Ferguson said at a meeting held in London last week to support this bill, this is the twentieth year of effort to secure registration. She said that those who object to registration argue that technical qualifications are of less importance than gentleness and sympathy, but they forget that both might be combined, and as a matter of fact the technical training often develops gentleness and sympathy. It was urged that posing as a trained nurse without proper training is a danger to the public and an injury to the genuinely qualified nurse. Mr. Sidney Holland, the indefatigable chairman of the London Hospital, was not present at the meeting, but has delivered himself of his strong objections to any registration of nurses in a letter in the public press, in which he points out that the matrons of several of the largest hospitals in London as well as many eminent members of the medical profession believe that registration would react harmfully and not advantageously upon the profession of nursing.

There is an encouraging sign of progress toward some legislation for the restriction of the supply of filthy and infected milk. I do not mean that Parliament, which has its hands already more than full, is likely to do anything in the immediate future, but there is evidently some prospect of action at some future date, for the farmers are beginning to grow alarmed. A few days ago there

was a meeting at the Hotel Métropole of the Farmers' Club to listen to a paper on "Present and Future Aspects of Dairy Regulation." The lecturer proceeded to make light of the dangers of impure milk, and to minimize the loss of infant life which is attributable without doubt to this cause. One gentleman with more ardor than knowledge said that it was time the fallacy that a great sacrifice of infant life was directly traceable to milk consumption was exploded. Another gentleman belonging to the same club mentions that a professor than whom there is, he considers, no greater authority upon all dairying matters, had been forty years looking for the tubercle bacillus in milk, and had only found it in one sample! Which suggests that a cobbler should stick to his last, and a dairyman had better leave bacteriology to those who know something about it.

Amongst the notable events of the month must be mentioned the generous offer of thirty thousand pounds by Dr. Henry Maudsley toward the cost of building a properly equipped hospital in London for the treatment and study of mental diseases. Dr. Maudsley, who has written many important works on the mind and its diseases, is one of the older members of our profession; he graduated in 1856, and delivered his Goulstonian lecture on the relation between mind and body in 1870.

A large audience listened to Mr. McAdam Eccles, assistant surgeon to St. Bartholomew's Hospital, who delivered the Lees-Raper lecture on the injurious effects of alcohol. The meeting was held at Oxford in the Town Hall, and the chair was taken by Professor Osler. The lecturer advocated very strongly the teaching of children in the elementary schools the elements of hygiene and temperance.

The death of Mr. William Allingham this month has removed one who was well known as an authority on one special branch of surgery, the diseases of the rectum. He was for years surgeon to the St. Mark's Hospital for Fistula, and started life curiously enough as an architect. He died at the ripe age of seventy-eight years.

NOTES AND QUERIES.

WHAT WE OWE TO THE MANUFACTURING PHARMACIST AND THE COMMERCIAL SCIENTIFIC LABORATORY.

The *St. Paul Medical Journal* for December, 1907, deals with this subject in the following manner:

There are some who go so far in their bitter hostility to proprietary remedies as to say that it would be better for the practice of medicine if all the manufacturing pharmaceutical concerns were out of business, and physicians had to depend entirely upon the prescription druggist. This of course is the height of absurdity, but we have heard the view openly expressed more than once. Many of the large manufacturing pharmaceutical concerns have committed offenses against legitimate medicine, are at present committing such offenses by lending their aid to the advertising quacks, and also by encouraging self-medication on the part of the public. These sins are becoming less frequent, and we believe will finally entirely cease as the result of a better understanding and closer relations between the manufacturer and the medical profession. Those who condemn broadly, and without reserve, the large manufacturing pharmacists and chemists, should pause and reflect upon the enormous debt which scientific medicine owes to these same concerns. To say nothing of the many elegant and palatable preparations which no retail druggist can duplicate, to whom do we owe the many serums, antitoxins, vaccines, animal extracts, and alkaloids without which the scientific physician could not practice his profession? We owe them to these very people whom we are condemning. Every new discovery, every new theory, which promises or even suggests a cure for some disease, is promptly put to the test in one of the great commercial laboratories, and the results announced to the medical profession. The fact that the commercial laboratory is a money-making concern, as opposed to the purely scientific laboratory which is not, does not detract at all from the value and

importance of the work done in the former. The scientific laboratory, practically always a teaching laboratory connected with some medical school, could not, even if it would, take the place of the commercial laboratory, and indeed, in many instances, the discoveries made in the former are promptly communicated to the latter for the purpose of enabling it to give the benefit of the new discovery to the medical profession.

In regard to ready-made prescriptions and proprietary medicines in general, the *Journal* has always maintained that while many of them are useful, and some of them are indispensable, the physician would do better in the majority of cases to write his own prescription, if he knew how to write it and was satisfied that the prescription would be dispensed by a competent and honest druggist. It must be remembered, however, that there is a vast army of practicing physicians living in country districts remote from druggists, and where scientific prescriptions, except of the very simplest character, cannot be compounded. These physicians must and do depend for many of their medicines upon the ready-made prescription, the so-called proprietary.

The physician demands that he shall know the exact amount of each active ingredient in the medicine he prescribes, and knowing this he can prescribe intelligently. Of course the honesty of the manufacturer must be taken on faith, but so must the honesty of the retail druggist to whom a prescription is sent to be compounded. In the matter of honesty we are always at somebody's mercy in this world. So let not the profession have any quarrel with the manufacturing pharmacists; we owe them too much and we are too dependent upon them. Let us reason with them when we believe them to be doing something wrong, let us openly condemn those who are shown to be deliberately dishonest, but let us give praise and credit to those who deserve it, and let us work hand in hand for the betterment and for the uplifting of scientific therapeutics.

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ORIGINAL COMMUNICATIONS.

TREATMENT OF RHEUMATISM IN CHILDREN.¹

BY J. P. CROZER GRIFFITH, M.D.,

Clinical Professor of the Diseases of Children in the University of Pennsylvania.

Though not always true, yet as a rule, to understand thoroughly the therapeutics of an infection, we must at least have a correct conception of its nature and cause. Unfortunately as regards rheumatism, in spite of all the study given to it we know merely that it is very probably an infectious disorder, while of some of the other disease manifestations called rheumatic we are entirely uncertain as to their real nature or their actual relationship to the acute articular affection. Our knowledge of the therapeutics of rheumatism is therefore necessarily purely empirical and unsatisfactory.

Acute Rheumatism.—"Articular" as a qualifying word is to be avoided in this connection since it is especially in children that rheumatism manifests itself in many other ways than by involvement of the joints. Articular symptoms are indeed often absent or but slightly developed at this period. Tendinous nodules, tonsillitis, chorea, erythema, or inflammation of the endo- or pericardium may be the first or the only lesion occurring, or these may be variously combined, or one or more of them appear in connection with articular involvement and in varying sequence. These different lesions are therefore not to be regarded as complications of rheumatic arthritis in children, but as independent evidences of rheu-

matism. This is to be borne prominently in mind in discussing treatment.

Although the attacks of rheumatism in children are probably less severe than in adult life, yet much greater tendency to recurrence of some form of the disease is shown in young subjects. This renders *prophylaxis* especially important. Particular precautions in rheumatically disposed children, or in those with a rheumatic inheritance, must be taken against overheating, exposure, and overfatigue. Not that the child should be kept constantly in a warm room—quite the reverse. The room indeed should be cool rather than too warm. The underclothing should be warm, preferably of wool, yet not so warm that perspiration is occasioned by slight exercise. Since the child lives near the floor, where draughts are most felt, there is great danger of chilling if this precaution is not observed. After free perspiration from active exercise out-of-doors the child should not be allowed to sit or stand about unprotected. After accidental wetting it should be quickly undressed, rubbed vigorously until dry and warm, and redressed in dry clothing. Careful, systematic hardening should be sought by use of moderately cool baths, preferably of salt water, followed by vigorous friction. In many cases change of climate is of great value, especially for the spring and winter months; dry, warm, equable climates being preferred, since cold, damp regions distinctly favor the development of the disease. High altitudes, how-

¹Part of a symposium on Rheumatism in Children read before the Philadelphia Pediatric Society, February, 1908.

ever, although dry are not favorable, as the changes from hot to cold are too sudden. The influence of diet is questionable. The eating of meat rather than of starch has been recommended, but the effect does not seem to be proven.

As tonsillitis is often the earliest manifestation of rheumatism, or, according to other views, as it is probable that the germs of rheumatism enter by way of an inflamed tonsil and spread thence to other parts of the body, the necessity of combating quickly lesions of the throat is at once evident.

Treatment of the Attack.—*External treatment:* The first indication, whatever the situation of the rheumatism may be, is to keep the affected part completely at rest. This is best done by putting the patient to bed in order to diminish the amount of blood supplied. Should fever be present this is imperative. Moreover, as it is not always possible to recognize the time of development of a peri- or endocarditis the rest in bed is a useful precautionary measure. The confinement to bed should continue for at least a week after the disappearance of articular inflammation or other symptoms of the disease. Inflamed joints should be wrapped in cotton, and sometimes immobilized by splints. Warm water should replace cold in washing any inflamed portion. The handling of the child should be of the gentlest in order to avoid giving pain. Various applications have been advised, among them one of the most trustworthy being ichthyol. Another favorite remedy is oil of gaultheria in full strength or in a 10- or 15-per-cent ointment if irritation of the skin is readily produced. Mesotan and spirosal have been used locally with good results. Gentle compression of inflamed joints by bandaging is often serviceable. The employment of the Bier method of passive congestion is worthy of trial.

In rheumatic endo- or pericarditis the application of an ice-bag is considered serviceable; certainly it often relieves the pain. Blistering over the pericardium is a severe method not often applicable to children and

of questionable benefit. In cases of tonsillitis antiseptic applications should be made to the tonsils, one of the best in my opinion being the tincture of the chloride of iron. For the hyperpyrexia which is occasionally seen cool bathing may be needed. The benefit obtained is generally greater than from the employment of internal antipyretic drugs.

Internal medication: Many drugs have been recommended, but few have shown evidence of being useful and have continued to be employed. Two methods of treatment are still especially in vogue: first, that by salicylic acid in some form, and secondly, that by alkalies. In my experience salicylate of soda is well tolerated by children, and in comparatively large doses. Sufficient should be given to produce some decided result—perhaps enough to cause slight deafness and buzzing in the ears, but not pushed beyond this. It is claimed that depressing effects may follow the administration of salicylates in large doses in some cases, and some authors consequently recommend salicin in place of it. I have myself never seen any depression follow the use of the salicylates, possibly because I have avoided extremely large doses. The salicylates in large amount are also contraindicated if nephritis complicates the disease. The drug certainly relieves pain and appears to me capable of abbreviating the attack in many instances; but it is difficult to prove this, and it is certainly without influence in preventing the development of cardiac involvement. Rheumatic tonsillitis is promptly relieved by the administration of salicylate of soda, and pleural effusion of rheumatic nature will often quickly disappear under this treatment. Much has been written to prove that salicylic acid compounds are without real value in rheumatism. Certainly, however, we have as yet no other drugs which offer any greater hope for benefit to be obtained by their use.

Salipyrin has been recommended to take the place of the salicylates. The taste is unpleasant, and on this account salophen is to be preferred for administration to chil-

dren. The latter drug, however, although useful, does not exert the rapid effect which follows the exhibition of the salicylates, at least in such dose as can be used safely. Aspirin is useful in many cases, and asaprol has been highly recommended. Salol cannot well supplant the salicylates and should not be given in large dose to children, as it is capable of producing symptoms of carbolic acid intoxication.

It is very important after the attack of rheumatism appears to be over to avoid early exposure lest a relapse occur, and to continue the use of salicylic acid for a considerable time in diminished doses.

The administration of alkalies in large amount is an old-time favorite therapy for rheumatism. These should certainly be given, alone or in combination with the salicylates, when the urine is decidedly acid, 5 to 15 grains of bicarbonate of soda or of acetate of potash being exhibited every three or four hours at from five to ten years of age. Statistics seem to indicate that the employment of alkalies has some power in preventing the development of cardiac involvement. The fruit juices, it is to be remembered, are to be classed among the alkalies in their therapeutic action.

In this connection may be emphasized the importance of watching carefully the condition of the heart in all cases of tonsillitis, arthritis, and chorea, and of insisting upon absolute rest in bed at the very beginning of cardiac involvement. A specific serum treatment is to be hoped for if the disease can be proved to be undoubtedly an infectious one and the germ positively isolated. The injection of a streptococcus serum has been tried by Menzer and others with the hope of diminishing the frequency of cardiac involvement. No very positive results have as yet been obtained. Weiss has employed serum obtained from rheu-

matic patients, but with no very certain success.

After convalescence from rheumatism debility and anemia often require prolonged treatment. Cod-liver oil and iron are now useful, and change of air is of great value.

Chronic Rheumatism.—This is a form particularly resistant to treatment. Here we need to make a diagnosis between rheumatoid arthritis on the one hand and the affection of the joints described by Still on the other, neither of them being susceptible of much benefit. When it is evident that we are dealing with subacute or chronic forms of rheumatism we shall probably gain little by the continued employment of the salicylates or the alkalies. Perhaps nothing is so serviceable now as the hydrotherapeutic measures which may be employed at sulphur and other hot springs, such as Aix-les-Bains, Teplitz, Wiesbaden, Bath, Hot Springs of Virginia, or other hot springs of this country. Constant mild counter-irritation of the joints with iodine is of service. Cod-liver oil, arsenic, iodide of iron, and hydriodic acid now find a useful place. Prominent, too, here is the application of dry heat, which is often extremely serviceable in subacute cases.

The injection into the tissues of fibrolysin has been recommended by Salfeld.

Muscular Rheumatism.—The relation of this condition to other forms of rheumatism is uncertain. Unquestionably in many individuals who have at times rheumatic arthritis there appears to be a special tendency to the development of involvement of the muscular or aponeurotic tissues. In other cases this occurs repeatedly, although no articular involvement has ever been observed. The internal treatment applicable for acute rheumatism in general is of value in muscular rheumatism also, and in addition the employment of local measures, such as counter-irritation, heat, electricity, and massage.

THE MEDICAL TREATMENT OF GONOCOCCUS INFECTION IN WOMEN.

BY ELLICE MC DONALD, M.D., NEW YORK,

Instructor in Obstetrics, College of Physicians and Surgeons; Clinical Assistant in Obstetrics, Vanderbilt Clinic;
Instructor in Obstetrics, New York Post-Graduate Medical School and Hospital.

The medical treatment of gonococcus infection in women is a subject which has been neglected by obstetricians and gynecologists, and left to be developed by the general practitioner. These two classes of specialists seldom see women with gonococcus infection, when the medical treatment can be of avail. The obstetrician sees gonococcus infection in the puerperium, but the further extension and continuance of the disease is usually overlooked or considered to be due to the minor disturbances of the convalescence from childbed. It is uncommon for a woman suffering from this affection to be referred to the gynecologist until the infection has extended beyond the confines of the uterus, causes decided pelvic symptoms, and is not suitable for medical treatment.

However, the great prevalence of the infection, its tendency to extend to the Fallopian tubes, to cause salpingitis and pelvic peritonitis, and the possibility of its cure in the early stages of a vulvar and cervical invasion, should encourage investigation in regard to the prevention of its extension and cure in the early stages of the disease.

Interest in the cause and extension of the disease dates from Noeggerath's¹ classic monograph in 1872, which was based upon his own clinical experience and was written before the discovery of the microorganism. He stated that 80 per cent of married men had gonorrhea, that 90 per cent of these had never been cured, and that of every five married women three had gonorrhea. These deductions seemed to be extravagant, but were finally more or less accepted by the profession after their partial confirmation by Zweifel and Sanger,² who claimed that 18 per cent of married women had gonorrhea. However, recent statistics have been adduced by Erb³ which give a much smaller percentage of marital infection as the

result of a previous gonorrhea in the male. Erb in his first paper collected the records of 2000 male patients, and concluded that about 49 per cent of men had gonorrhea before marriage and that 45 per cent recovered, so that no traces of the disease were left. He concludes that not more than 4.5 per cent of married women are seriously infected with gonorrhea. In a later paper⁴ he continues his study and adds 400 cases of male patients, stating that the proportion of wives suffering from the consequences of gonococcus infection is even less than the 4.5 per cent of his former statistics.

These statistics were attacked by Blaschko⁵ and Vorner, who called attention to the fact that the statistics refer to a limited class and that they are based on the statements of patients.

It is probable, however, that the truth lies nearer Erb's statements than the sweeping ones of Noeggerath. Erb's percentage of infection of married women may be low, but even at that percentage it means that a considerable proportion of the community is infected by the gonococcus. When the infection in unmarried women is added to Erb's percentage, which may be taken as a fair and low estimate of the amount of infection in married women, it means that more than one woman in every twenty is infected by the gonococcus. Such prevalence surely warrants investigation and study of the cause and cure of the disease.

Many investigators of this infection believe that it is incurable, but more recent observations show that it not only may be but often is cured. Leipmann⁶ believes that the affection is often cured, and that in one-half of the cases the infection does not rise above the internal os. There is no doubt that vulvar and cervical gonococcus infection may be cured without its extension to the uterus and tubes, and if it is not directly

cured, its extension upward may be prevented by appropriate treatment.

The infection in women is seldom acquired by other means than sexual intercourse, although in little girls it is quite common for extra-sexual infection to occur, and numerous epidemics of gonococcus vulvovaginitis have been reported from children's hospitals.

The first site of the infection may vary considerably, but the organism is more commonly found in the urethra. Laser⁷ in 353 cases of gonococcus infection found the organism in the urethra 111 times, 7 times in the vagina in 180 cases, and 21 times in the cervical canal in 67 cases. In four-fifths of the 111 cases of urethral infection there was no macroscopic evidence of a urethritis. The organism may be frequently demonstrated in the urethra, when there is no visible secretion.

The tendency of the organism to attack the non-stratified epithelium accounts for its distribution in the genito-urinary tract. The small glands of the vulva and urethra are peculiarly susceptible. Infection of Skene's glands of the urethra and Bartholin's glands is most common. In the infection of Bartholin's glands it is not usual for the entire gland to be infected, but only the duct. If deep infection of the gland results, it is more commonly from a mixed infection. The red orifice of Bartholin's glands may be frequently seen in this infection. Vulvovaginal abscess is a comparatively uncommon complication. It happens quite commonly that when this gland becomes infected the duct and opening become patulous and may admit a probe. This is most common in the exacerbation of the disease which occurs in the puerperium.

The vagina offers a large surface for infection to the gonococcus, but is seldom attacked on account of its protective stratified epithelial covering. The infection passes this obvious location to the more common sites of inflammation—the urethra, the glands of Bartholin and Skene, and the glands of the cervix. The cervical glands are most commonly attacked; infection

may cause obstruction of their secretion and persist in them for a long time. The cervix is usually swollen, enlarged, and congested, the cervical glands are often felt as small cysts from obstruction of their ducts, and a profuse discharge usually accompanies the endocervicitis. The microorganisms may even penetrate the cervical canal to involve the uterine glands and mucosa. The line of separation of uterine and cervical mucosa is not usually exact, but, as has been shown by Ashoff,⁸ the cervical endometrium with the glands extends usually about two-thirds of the way up the cervical canal, while the upper third of the canal is commonly lined by endometrium like the uterus, save that the mucosa forms deeper and less regular indentations in the musculature. This is at the level of the circular vein.

The infection thus may involve both surfaces of the cervix and infect the cervical glands both within and without the cervical canal.

The endocervicitis caused by gonococcus infection may follow upon or precede a urethritis or an inflammation of the glands of Bartholin; but the cervical inflammation is usually the most resistant to treatment and may persist for years.

An inflammation of the trigone of the bladder is a frequent accompaniment of endocervicitis and gonococcus infection generally, as has been shown by a report of a number of cases of bladder inflammation, studied cystoscopically by the author.⁹

Bladder inflammation is the rule in gonococcus infection of the cervix, but may either precede or follow the cervical involvement. The close attachment and association of the uterus and bladder explains this phenomenon. The enlarged hypertrophied cervix with its congested vessels causes an extension of the inflammation and congestion to the trigone of the bladder. A history of frequency of urination is one of the most reliable symptoms of past gonococcus infection, and is particularly significant when this frequency is associated with purulent vaginal discharge. The estimation of frequency of urination is best

obtained by asking the patient if she has had to arise at night to urinate. The number of times of urination at night is usually a fair estimate of the severity of the bladder condition, and in this way a history of the onset of infection may usually be obtained.

The essential lesions of a gonococcus infection of the lower genitalia are inflammation of the urethra, glands of Bartholin and Skene, and of the cervix of the uterus.

The inflammation may be noted in the vulvovaginal glands by the red orifices of the inflamed ducts, the "macula gonorrhoeica" of Sanger. These orifices are, in acute inflammation, often open and patulous, exuding a creamy pus: this condition is most common in the puerperium, when the softened tissue affords little resistance to the inflammation. The infection of these ducts may be caused by other organisms, as the staphylococcus, but in the great majority of cases the cause is the gonococcus, although secondary infection with other pus-forming organisms frequently follows.

Gonococcus infection usually involves the whole length of the short female urethra and commonly spreads to the trigone and base of the bladder. Skene's glands, once involved, form a nidus of infection for the urethra. The organisms are often found when no pus is present. The urethritis is usually easily relieved, but the infection of the trigone of the bladder is very resistant to treatment.

Gonococcus vaginitis is a term which is frequently misapplied and which is commonly used to refer to gonococcus endocervicitis. True gonococcus vaginitis occurs infrequently, but it is sometimes seen in infection of the softened, bruised tissues of the puerperium, in young children, and in exacerbations of a chronic gonococcus infection which may occur at the menopause. This lesion is not usually resistant to treatment by douches.

The most common lesion of gonococcus infection, however, is an endocervicitis. This is usually noted as a hypertrophied, inflamed, and patulous cervix, causing a purulent discharge. Small eminences of obstructed cervical glands or cysts may be frequently seen and felt; there may be so-

called erosions or excoriations upon the cervical lips.

The accurate diagnosis of gonococcus infection, of course, depends upon the microscopical recognition of the specific double biscuit-shaped organism. This is best done by taking smears from the urethra and cervix. Gonococci can be recovered from the urethra even when no macroscopic evidences of pus are present. Smears taken from within the cervical canal, as a rule, give the best results, as has been shown by a study by Stone and the writer¹⁰ of gonococcus infection in the puerperium.

The smears should be stained by Gram's stain or by the more convenient Jennen's blood stain, which is very useful for this purpose. The organism lies within the leucocytes and pus cells, but may be extracellular, and it is stated by Wynn¹¹ that the more active the lesion the more commonly are the cocci found extra-cellularly.

The organism is difficult to cultivate, but upon special media this may be overcome. Media containing blood or blood serum give the best results. Serum glucose-agar, upon which a drop of freshly drawn blood is spread, gives good results. Blood serum and ascitic fluid are also useful. Jellyed blood serum in connection with glycerin-agar is also of value in its growth. Kiefer's special medium for cultivation of the gonococcus is perhaps the most satisfactory. It consists of 3.5 per cent agar, 5 per cent peptone, 2 per cent glycerin, 0.5 per cent sodium chloride, and one-third by volume of sterile ascitic fluid. Meyer¹² used this medium in 90 cases and obtained positive results by culture in 87 cases, while the organisms were found microscopically in 58 cases. The writer has found this the most satisfactory of the various media. The colonies usually show in twenty-four hours as minute grayish translucent spots, and after forty-eight hours are well developed. They are circular and translucent with sharply defined margins and are brownish, denser, and granular toward the center. No growth will occur upon ordinary agar, or broth. Bruschettini and Ansaldo¹³ also use media containing blood and white and yolk of egg, with which they

report very good results in the cultivation of the organism.

While these bacteriological methods are of use in the diagnosis of the condition, microscopic examination of the cellular elements of the discharge is also of value. For this purpose vaginal discharges may be divided into simple leucorrhea and discharge of infections. Simple vaginal leucorrhea shows macroscopically many flat vaginal cells which stain well with many similar degenerated cells which do not stain as well. There are disintegrated cellules with proliferating nuclei, lymphocytes, and numerous cocci and bacteria, amongst which Doederlein's bacillus is common.

The secretion of gonococcus infection, on the contrary, shows microscopically but few normal flat vaginal cells or columnar cells from the cervix, and numerous degenerated vaginal or cervical epithelial cells; there are many polymorphonuclear leucocytes, indicating the suppurative process, and few lymphocytes. The bacteria are few in number, but the gonococcus is frequently present.

The cause of the disease may be traced, as has been shown by Harmsen,¹⁴ by the different cellular elements. At the onset the polynuclear leucocytes are usually found before the gonococci may be recognized microscopically, and, with the abatement of the affection, the leucocytes and gonococci are replaced by epithelial cells and the microorganisms normally present. Siredey and Bigart¹⁵ also show that the microscope is of some value in following the course of the disease and in distinguishing between acute and chronic processes. Long bacilli streptococci are found oftenest in normal secretions, while short cocci are often found in infected discharges. The reappearance of the ordinary forms is thus an evidence of improvement.

The gonococci may be best recovered from the vaginal secretions after some irritation or congestion. The best results are obtained from smears taken after menstruation and after the sixth day of the puerperium, when the lochia of infected patients shows many pus cells. Often, however, when an infection is very chronic, it is dif-

ficult to recover the organism, unless the smears and cultures can be taken at propitious moments, as after menstruation.

In making a diagnosis in these cases the history is often of value. A history of leucorrhea or purulent vaginal discharge and frequency of micturition following upon the first menstruation after marriage or coitus is often due to a specific infection. There may be sometimes obtained a definite history of burning and scalding of urine caused by a urethritis. But the usual history is one of leucorrhea which is worse after each menstruation, and of frequency of urination at night which is caused by a trigonitis, and which becomes worse, as a rule, after chilling or taking cold. Hence the expression is common amongst women of having "taken cold in the bladder." These symptoms are not, as a rule, sufficient to cause much disturbance on the part of the patient, but are often the result of gonococcus infection of the genitalia.

The course of the disease is affected by a number of influences. The youth of the patient is a direct factor in its virulence: the soft tissues of the young girl offer a good nidus and little resistance to the organism. This is shown by the virulence of the epidemics reported in children's hospitals and clinics.

In the adult, however, the four factors which influence the course of the disease are: (a) menstruation, (b) coitus, (c) pregnancy, and (d) curettage.

Menstruation and any congestion have apparently a direct effect upon the disease. In an infected woman the evidences of the disease do not show, as a rule, until after the first menstruation has passed. This is well shown in infection in the newly married, where the leucorrhea begins after the first menstruation. There is usually in the acute stages an exacerbation of the discharge after each menstruation. The microorganism may be more readily discovered in the vaginal discharge immediately after the menstruation.

Coitus should be restricted, if not completely abolished. Of course, care should be taken to see that the husband is completely cured of the disease, for the addi-

120 THE PUEBLO GAZETTE
tional injury of repeated fresh infections gives no hope for a cure of the disease in the woman. But in addition to this, coitus itself, and particularly excessive coitus, has an evil effect upon the disease. The congestion and traumatism prevent the progress to a cure.

Pregnancy has a distinctly bad effect upon gonococcus infection. This is not particularly noted during the pregnancy itself, but after childbirth the disease, which was before latent, usually lights up and very commonly spreads to the uterus and Fallopian tubes. The influence of labor upon a preëxistent gonococcus infection is most marked. The softened tissues, the bruised vagina, and large raw surface of the puerperal uterus offer a splendid culture ground for the organism. It usually extends by the mucous membrane, but may penetrate the softened uterine muscle. Extension to the tubes is a common result, and late disturbances are the rule. This is well shown by 17 cases of puerperal gonococcus infection reported by Stone and the author,¹⁶ amongst which 12 had rises of temperature to about 100° F., and the average duration of the fever was 4.1 days. The fever in all cases was very irregular and followed no definite curve.

The gonococcus was best found in the lochia after the fifth day of the puerperium, when pus cells appeared. The lochia was usually finally replaced by a purulent discharge. The organisms were most frequently found in smears from the interior of the cervix. In 9 out of the 17 cases there were clinical symptoms of pain and abdominal rigidity, indicating extension of the disease to the Fallopian tubes and pelvis. Operation was done for pyosalpinx in 3 of the 17 cases—in 2 one year after the puerperium, and in 1 for ruptured pus tube eight days after delivery. These 3 cases were known to the author, but no definite effort was made to trace the other cases, so that it is not known whether there were more than three cases with resultant pyosalpinx or purulent salpingitis.

The gravity of puerperal infection with the gonococcus has only recently been studied, and the different views may be

reconciled by the fact that the gonococcus is difficult of cultivation and can but rarely be demonstrated in the lochia before the fourth or fifth day, when pus cells are numerous. Cultures and smears are usually taken earlier in the puerperium and are often obscured by blood. Special gonococcus media are seldom, but should always be, used in every study of puerperal infection, as the organism does not grow on the ordinary media. These findings have been confirmed by Mayer¹⁷ and by Little.¹⁸

The gravity of this condition exists not so much in its prime infection and immediate constitutional results, as in the more remote results of extension of the disease to the tubes and pelvis some time after the puerperium. It is well known that the streptococcus infection results in slight anatomic alterations of the pelvic organs after recovery from the infection; but the reverse is true of gonococcus infection, where marked alteration of tissue is the rule and spontaneous recovery from pelvic disease from this cause the exception. This is well shown by the series above quoted, where three cases were operated upon and six other cases showed slight pelvic symptoms in the puerperium, while the other eight cases were not traced after that time. Pelvic and tubal disease is often ascribed to puerperal infection and miscarriage, when the etiological factor is often gonococcus infection which may be lighted up after the delivery, and which may be the cause of the miscarriage, as three of the 17 cases had miscarriages ascribed to this infection.

An ill-advised curettage is often the direct cause of extension of a gonococcus infection about the cervix and to the tubes. The gonococcus infection may cause dysmenorrhea and profuse menstruation. The dysmenorrhea may result from the involvement and alteration of the cervical tissue, which causes a condition analogous to the elongation and stenosis of the cervix. An increase in the amount of menstruation, however, is more commonly a result of infection of the uterine cavity and a true gonococcus endometritis. This usually continues, to become an atrophic endometritis with lessened menstruation. The

danger of curettage in these conditions may be seen in six cases reported by Holden¹⁹ in a study of dysmenorrhea. In these cases at the time of curettage the pelvic organs were noted as "apparently normal," while months afterward the patients returned with pelvic inflammatory disease and were operated upon and their Fallopian tubes excised. Two cases of tubal disease have been operated upon by the author during the last six months, in which the extension of the disease dated from such curettage; in both cases the tubes were markedly diseased.

Thus it may be seen that surgical means have no place in the treatment of gonorrheal disease until it has first extended to the Fallopian tubes, save when evacuation of a vulvovaginal abscess is necessary. Curettage by baring a raw surface in the uterus and by causing congestion and exudation offers a direct means for the extension of the infectious disease to the pelvic organs.

The chief indications in the treatment of gonococcus infection of the lower genitalia are rest and cleanliness. Rest of the parts may be obtained by not permitting pregnancy or coitus, and as the menstruation has a direct effect upon the course of the disease the patient should be urged to rest during this time, particularly in the more acute stage of the disease.

Cleanliness is best obtained by the use of alkaline douches. The common bichloride douche is irritative and inefficient, as it has been shown that bichloride of mercury is of no use as an antiseptic in the presence of albuminous material, such as pus or leucorrheal discharge. It is also only efficient as an antiseptic in strongly acid solutions, and very little albuminous material will neutralize a large amount of the antiseptic. The process of douching is one which requires a solvent of purulent matter, as the liquid is not retained long enough to have any decided antiseptic action, unless in such strength as to work harm to the tissues in which the gonococci lurk. The otologists have proved in the treatment of suppurative otitis media that bicarbonate and sulphate of sodium solu-

tions give the best results as solvents of mucus and pus. These may be used in the treatment of gonococcus infection in the proportion of sodium bicarbonate 3ij and sodium sulphate 3j to the quart. If pus predominates in the discharge, the sodium sulphate should be increased to 3ij, as it is a better solvent of purulent material than is the bicarbonate. The douche should be at least two quarts and given upon a douche pan.

Hot sitz baths are also of use, especially where the vulva and skin of the thighs are excoriated and irritated by the vaginal discharge.

For purposes of cleansing the cervix, vagina, and vulva, crude pyroligneous acid may be used on a cotton swab to cleanse the parts before other applications are made. This substance is most efficient for the purpose and is not irritating.

The treatment of the inflammation of the vulvovaginal gland and of excoriations upon the cervix is best done by applications of tincture of iodine or a solution of iodine 1:100 in water and potassium iodide. This substance is one of the most efficient tissue antiseptics and has a very good effect upon infected surfaces. The patulous orifices of the vulvovaginal gland will often permit injection of the iodine. The applications should be made directly to the diseased part, and then the excess should be wiped off, as the substance is too irritating and spreads on the surface too easily to remain in excess. This treatment should not be repeated more often than once in three or four days.

There is often associated with the irritating discharge a pruritus or irritation of the vulva. This usually extends some little way within the vagina, and this should be kept in mind during its treatment. After the alkaline vaginal douche is used, the parts should be wiped dry with cotton-wool (absorbent cotton should not be used), and strips of cotton-wool soaked in carbolic acid solution 1:40 should be laid over the irritated areas, one inch of one strip passed into the vagina, and the whole kept in place over night by a T-bandage. In the morning an ointment may be applied con-

taining adrenalin chloride 1:1000, or, as the condition improves somewhat, an ointment of carbonate of bismuth made up with lanolin and with glycerin added to diminish the thickness. Ointments are better than washes in this condition, as they protect the parts from the scalding discharges. If the condition is very severe, pilocarpine in one-eighth to one-quarter grain doses is often effectual in allaying the itching. It should be remembered that treatment must be made within the vagina, as the irritation and congestion often extend some distance up. The alkaline sitz baths, with half a pound of sodium bicarbonate to the usual size of sitz bath, are often of use, when the condition is extensive.

The treatment of the inflamed cervix must be directed to the infected cervical glands. The only successful procedure in these cases is to destroy the glands, because their inaccessibility makes destruction of the cocci impossible without destruction of the cervical glands themselves. This may be done by the injection into the infected glands and beneath the mucous membrane of lactic acid by means of a hypodermic syringe, as has been advised by Chandler.²⁰ The vagina is cleansed and the cervix exposed. An ordinary hypodermic syringe loaded with pure lactic acid is inserted into any of the infected glands which show prominently from their encysted contents causing bulging, and the acid is also injected in a number of places on all sides of the cervix. This may be done at one sitting, but had better be spread over several treatments. If there are a number of encysted nodular glands containing pus and a glairy mucus, they may be punctured and cauterized by means of a small thermocautery, or better, a small electro-thermocautery point. This effectually destroys the gland and gives it proper drainage. The patient should be warned that the discharge will increase for a short time after the cautery treatment until the necrotic tissue is cast off. The cauterization should not be deep nor extensive, and it should be directed toward the particular infected glands which appear as cysts. The cervix may be cocainized, but if the cautery

point is small and sharp, this is seldom required.

The cervical inflammation usually persists after the other vaginal and vulvar parts are cured; an irritating vaginal discharge is usually the result, and many douches and painting of the cervix are not effectual or give only temporary relief.

An inflammation of the trigone of the bladder is often coincident with the enlargement and hypertrophic inflammation of the cervix. This should be treated by means of alkaline or quinine injections and direct applications to the bladder; the treatment may be controlled cystoscopically as is directed in a series of 45 cases reported by the author.²¹

The use of alkalies by mouth, as sodium bicarbonate combined with tinc. hyoscyamus, is indicated for the control of the bladder spasm and its effect in rendering the urine bland and unirritating.

The medical treatment of gonococcus infection is only suitable to infection of the lower genitalia and below the internal os of the uterus. When the uterus itself is infected, we should not attempt to make topical applications to it. When the tubes are infected, the best treatment of them is absolute rest in bed with the application of heat by douches. Treatment of tubal disease by means of applications of irritants, etc., to the vault of the vagina is as irrational as the treatment of appendicitis by poultices or counter-irritation to the skin. These applications to the vault of the vagina are liable to increase the amount of tubal inflammation and cause exacerbations of it as does curettage. The treatment of gonococcus salpingitis is rest or eradication of the diseased organs; intermediate measures and vaginal tinkering can only do harm. However, in these cases the treatment of the vulvar and cervical inflammation should not be forgotten, but should be the more carefully done.

The use of medicated tampons has given but little result in my hands, save when it is required in cases of retroversion or other congestive conditions. In these cases the tampons should be medicated with a bland substance, as boroglycerin; ichthyol solu-

tions have caused too much irritation to be advised.

The medical treatment of gonococcus infection of the lower genitalia may be then summarized into two phases: First, the prophylactic treatment and prevention of the extension of the disease by care at menstruation, prevention of pregnancy, restraint of coitus, and elimination of trauma and of irritation of the uterus by applications or surgical measures; secondly, the direct treatment of the disease by rest, cleanliness, and measures directed to the lesions themselves, as treatment of the vulvar and cervical inflammation and inflammation of the adjacent parts. In this way a large percentage of these infections may be cured and their extension to the uterus and Fallopian tubes prevented.

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HEMORRHOIDS, WITH SPECIAL REFERENCE TO THE TREATMENT UNDER LOCAL ANESTHESIA.¹

BY J. H. MAYNARD, M.D., ADAIR, IOWA.

It is the custom of many physicians to give the treatment of hemorrhoids scant attention. The reason for this is not hard to find: medical colleges give little instruction on the subject, and few graduates care to work in unknown fields. I have been impressed by the number of cases coming to my office who claim to have been treated unsuccessfully elsewhere, and it has occurred to me that perhaps a discussion might be profitable at this time.

The etiology of hemorrhoids has not been well worked out, though I think the valveless conditions of the veins of the portal system, of which the hemorrhoidal veins are a part, taken together with the erect posture, are admitted to be the principal predisposing factors.

The exciting causes are those which produce congestion of these veins, so located anatomically that they have to sustain great

variations in pressure, and a congenital or acquired weakness of their walls which allow rupture or a pathological dilatation to occur. Thus obstructive disease of the heart, portal congestion, occupations requiring prolonged maintenance of the erect position, especially under favorable circumstances, as in the case of railroad employees working on trains, horseback riding, tight lacing, habitual retention of feces in the rectum, pressure from enlarged organs or growths in the pelvis, irregular and sedentary habits, or heavy lifting in persons not accustomed to it, may under certain circumstances cause hemorrhoids. Children seldom have this disease, the other rectal affections, as prolapse, being more common, though little girls sometimes exhibit external piles. After puberty the great preponderance of cases are in males. External hemorrhoids are so common that, as Gant (Sajous) says, few people reach middle life without having suffered from them. When

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not inflamed they give rise to no symptoms except a sense of fulness and heat in the anal region. They are often aggravated by uncleanness, irregular habits, and improper diet. When they become congested they are exquisitely tender, and the traumatism to which they are naturally subjected causes an extravasation of blood into the connective tissue, which forms a clot; this by pressure keeps up the irritation. If left alone it may go on to resolution, fibrous organization, or suppuration, and may even form an external fistula, as in a case I saw last spring.

There is a great difference in the suffering which hemorrhoids produce. What would merely cause a discomfort in one person might produce severe suffering in another, depending on the general contour of the surrounding parts, which of course determines to a large extent the traumatism to which they are exposed.

In internal hemorrhoids when not inflamed the most prominent symptom is bleeding, which occurs at stool and is usually slight, merely a few streaks on the feces or a staining of the clothing; heat, fulness, and a sensation as though the rectum had not fully expelled its contents occur. Thrombosis is an essential part of the pathology of hemorrhoids; it occurs as the result of traumatism or infection. As a rule only part of the blood-clot is absorbed, and the remaining part undergoes fibrous organization; thus each recurring attack of inflammation tends to leave the piles larger than before. When the hemorrhoids are small, they seldom protrude, but as they increase in size protrusion is more frequent, and they become ulcerated and bleed freely. When in this condition they are subjected to the alternate contraction and relaxation of the sphincter muscle; the pain is severe and causes the patient to regard each act of defecation with terror. As a result he puts off attending to the calls of nature as long as possible, and by thus inducing constipation increases his suffering until he is often a complete nervous wreck.

Frequently after the masses have been coming down at irregular intervals for

some time, during the extra congestion due to some indiscretion, when the hemorrhoids prolapse they are gripped by the sphincter so tightly that they cannot be replaced by the patient and become strangulated. The symptoms in addition to the protrusion and swelling are pains radiating down the thighs and into the abdomen. This is a serious condition, unless they are reduced by natural or artificial means, as gangrene may occur, and though in occasional cases it may result in a spontaneous cure it more often ends in abscess or fistula.

As in all therapeutic procedures, the first step toward scientific treatment is an accurate diagnosis. It is not enough to take the patient's word for it that he has piles. He might have eczema, pruritus ani, fistula, fissure, prolapse, a warty or even a malignant growth. It is well known that the layman ascribes every ill in the region of the anus to piles. However, a careful examination will leave no doubt as to the true condition in most instances. Rare cases of course develop that are very puzzling.

I remember a case I saw a few years ago with no complaint of rectal symptoms which went the rounds for some time as a case of pernicious anemia, until it was found accidentally that each exacerbation of the profound anemia was coincident with the passage of a large quantity of pure blood per rectum. The patient was finally cured by a clamp and cautery operation.

With the patient on a table under a good light the examination should be begun by inspection, followed by palpation, and as the very last step the use of the speculum, since this is apt to be painful. It is, however, less so if the rectum had become somewhat used to being manipulated before the speculum was used.

The classification of hemorrhoids into external and internal is hard to improve upon, as it represents two different sets of veins and also two classes as regards treatment. If every case is carefully examined as outlined above it is surprising how many of them can be subjected to operative treatment under local anesthesia, and this too before they are off the examination table.

The medical treatment of hemorrhoids is to a large extent palliative rather than curative. Though some cures undoubtedly occur I am sure a careful investigation will show that the number of permanent cures is extremely small. However, as there are many cases which we cannot persuade to allow us to cut off an anal tag no larger than a pea under local anesthesia if they even suspect what we are going to do, it is well to look over the means we have of giving relief other than by operative procedure. In all cases the diet should be simple, mainly vegetable, and stimulants should be avoided. The untoward effect of cheese is well known, and many other articles could be mentioned that are equally injurious. The bowels must be kept open by a gentle laxative, purging being carefully avoided. A teaspoonful of compound licorice powder at night or a glass of mineral water in the morning is often sufficient. If the mineral water causes griping, this may be avoided by adding ten or fifteen drops of spirits of camphor to each glass. In these cases I have been well pleased with phenolphthalein, which can be regulated quite accurately. It produces copious evacuations with very little of the astringent secondary effects of most other cathartics. Cascara is very good later, when some of the soreness has gone. But the sooner we get normal peristalsis by means of diet the better.

For external hemorrhoids the hot sitz bath gives great relief and promotes cleanliness. The old-fashioned poultice is less elegant, but is efficacious. Lead and opium wash gives relief in some cases. It is important to avoid a wash or ointment containing any of the corrosive mercuric compounds, for absorption is active in this region, and they have been known to set up a diarrhea which will aggravate the condition. As an ointment I have great faith in the subsulphate of iron in the strength of one drachm to the ounce of a mixture of lanolin and vaselin.

In the internal form enemas of hot saline solution gradually changed to cold will almost always give relief from the pain and

help to subdue the inflammation. Hot sitz baths or local steam baths often relieve the pain of painful protruding piles. Probably as much relief comes from the relaxation of the sphincter muscle as from any effect upon the inflamed mucous membrane. The injection at bedtime of a tablespoonful of witch-hazel in three or four ounces of warm water, which is retained, sometimes appears to have a permanent astringent effect upon the hemorrhoidal masses. All local medication must be accompanied by careful dieting and avoidance of constipation.

During the acute attack the patient should be instructed to lie on the side with the hips elevated, which will often do wonders in relieving the congestion. For the intolerable itching I have found nothing equal to ichthyol and vaselin in the strength of a drachm to the ounce, applied externally or on pledgets of cotton.

For the bleeding, if not controlled by hamamelis injections of hot water, an enema of a solution of subsulphate of iron 5 to 10 per cent, or the officinal liquor ferri subsulphatis, usually acts promptly. A suppository containing iron subsulphate and lead acetate is also efficacious and more elegant.

The operative treatment of external hemorrhoids consists of either incision, or excision and removal of the contained clots. This is best accomplished in the following manner: The cocaine used is a one- or two-per-cent solution, injected as recommended by Schleich, using a fine sterilized hypodermic needle. This is inserted into uninflamed tissue and gradually pushed toward the tumor. The only special precaution is not to go too deeply and inject into the sac instead of the sac-wall. If this procedure is properly carried out there is no pain except in the first prick, and if the patient is very nervous this can be avoided by spraying with ethyl chloride.

Before any cutting is done I always clamp on a small artery forceps firmly. This is much better done at this time, as sensation sometimes returns very quickly when the bleeding occurs, and the clamp causes much

more pain than the knife. It is almost impossible to carry out the necessary manipulations without some means of making traction. If there is enough hypertrophy of the skin so that it is apparent that a tag will be left, I fasten on a second artery forceps at one side of the growth for traction and remove as much tissue as seems necessary by cutting on each side of the first pair of forceps. The second procedure is to remove the blood-clot with a small curette. I believe this is better than to squeeze it out, which might rupture more veins in the vicinity. If the right amount of tissue has been removed the edges of the wound will fall together naturally. I never use sutures unless the bleeding is profuse, as drainage is better without it, and if the little wound is closed a second clot is liable to form.

The dressing is a pledget of cotton dusted with boric acid or some of the odorless iodine powders. This is left in place till the oozing stops, after which I use no dressing, instructing the patient to bathe the parts freely with very hot water after each evacuation as long as there is any tenderness—*i.e.*, two or three days. Of course, during this time it is very important to regulate the diet and bowels. There is practically no after-pain in these cases, and most of the patients state that the pain and soreness is never at any time as great as before the operation.

It may seem that I have gone greatly into detail in describing this little operation, but I know of no place where careful painstaking work counts for so much or where a few minute blunders cause more dissatisfaction.

In internal hemorrhoids there are only two operations to be considered—*i.e.*, the cautery and clamp and the ligature operation. These as done under general anesthesia are too well known to be described again, the majority of operators rather favoring the clamp and cautery method.

I will describe the technique of using the ligature operation under local anesthesia.

The method of injecting the lesser sphincter nerves of Morestin at the point of entrance into the sphincter muscle, as demon-

strated by Tuttle in 1906, is the first real advance made in the surgery of hemorrhoids in the last twenty-five years. This is as follows: Under antiseptic precautions the needle is inserted in the perineum in the median line about one-half inch posterior to the anus. The forefinger of the left hand is inserted into the rectum and the sphincter pulled down into easy reach of the needle. The needle is now passed well into the sphincter muscle about one-half inch to the left of the median line, the exact position being known by palpation, and a few drops of a one-half-per-cent solution of cocaine deposited. As the needle is gradually withdrawn for a short distance more of the cocaine solution is injected along the needle tract. Without withdrawing the needle this procedure is repeated on the right side of the median line. The balance of the syringe is injected into the sphincter in the median line—twenty to thirty minims of a one-half-per-cent solution being used altogether. There is only one puncture made in the skin, and the needle is not fully withdrawn during the entire procedure. After three minutes dilatation of the sphincter muscle may be begun, and is practically painless in most cases. Of course the extreme divulsion obtained under general anesthesia cannot be reached, but a good state of flaccidity can be obtained, which is all that is needed for eversion of the hemorrhoids. For the anesthetization of the hemorrhoids themselves a one-tenth-per-cent solution of cocaine is used. This is injected at the mucocutaneous border and up as far as it is needed. If one desires to use the sterile-water anesthesia of Gant from this point on it may be done, but it is not as reliable as a weak solution of cocaine, which is absolutely safe. I prefer the cocaine solution, as it does not distort the parts so much. The pile is dissected up to a point inside of the rectum exactly as one would under general anesthesia, ligated, and cut off, leaving a good stump.

After a rest the patients can go home, though I prefer to have them ride and not go a long distance. The after-care is the

same as after any ligature operation. The patients remain in bed till after the bowels move, which should usually be accomplished on the second day. An injection of olive oil a short time before the bowel movement makes it less painful and lessens the chances of infection. It is unnecessary to add that asepsis must be carried out as thoroughly as though we were operating under general anesthesia.

Capillary hemorrhoids are in reality nevi. They appear as small red spots about the size of a five-cent piece. They do not project above the surface, so cannot be felt, but can be seen through a speculum; they bleed profusely when touched. The treatment, as for all nevi, is some form of cautery. In the absence of the cautery the application of nitric acid is very efficient. The only thing to be careful of is not to burn the surrounding wall of the bowel.

There is one other method of treating hemorrhoids which in my opinion should be mentioned but to be condemned. I refer to the injection of strong caustic substances into the hemorrhoidal masses. I have never used this method simply because I have been afraid of it. It is often followed by very bad results, but when no bad results follow the method is ideal.

In the preparation of this paper I have consulted freely the writings of Schleich, Kelsey, Gant, Pennington, Tuttle, Martin, Adler, Rickets, and Bishop, as well as articles appearing in the leading journals of the last few years. In speaking of treatment I have only mentioned those methods that I have tested personally. I do not wish to be understood as claiming that operating under local anesthesia is all sunshine, but I do know that in my experience, at least, the results have been very satisfactory.

UNCINARIASIS IN PORTO RICO AND ITS TREATMENT.

BY FRANCIS DENISON PATTERSON, M.D.,

Surgeon to the Howard Hospital, Philadelphia.

Having been stationed in Porto Rico in 1898, while acting as a surgeon in the army, it was a matter of extreme interest to return there again this year and to have the opportunity of observing and studying the magnificent work that has been performed in an effort to eradicate the characteristic anemia, which for at least a century had not only sapped the energy of the rural population, 90 per cent of whom had the disease, but which was also responsible for at least 30 per cent of the total mortality of the island.

In view of the importance of the work that has been accomplished, it is of interest to briefly note from the reports the sequence of events which culminated in the appointment of "The Commission for the Study and Treatment of Anemia" in 1904 by Governor Hunt. In August, 1899, as the result of the hurricane which almost destroyed the island, Dr. Ashford, of the Medical Corps of the army, established a field hos-

pital of 136 beds at Ponce for treatment of the large number of people who could not be accommodated in the hospitals of that city. Fully three-fourths of those admitted were suffering from anemia, which was generally believed to be the result of faulty diet. Later, as generous food, with iron and arsenic, failed to cure, the condition was attributed to malaria, climate, lack of hygiene, etc., all of which proved to be inadequate causes. It had even been declared to be a pernicious anemia, and with this idea Dr. Ashford made some blood examinations, and finding a high degree of eosinophilia in many cases he was led to suspect the ankylostoma, and this suspicion became a certainty upon microscopical examination of the feces. This was the first proof of the existence of this parasite in Porto Rico.

As a result of this demonstration the Board of Health had a small pamphlet on the disease printed and distributed; but it

produced no practical result until 1904, when the Legislative Assembly passed a bill providing for the formation of a commission. The then governor of the island appointed as its members Dr. Ashford of the army, Dr. King of the Marine Hospital Service, and Dr. P. Gutierrez Igaravidez of Porto Rico.

During that year they established and maintained for a portion of the time two hospitals—one at Bayamon and the other at Utuado—and had under treatment 5490 cases, with the following results: Cured, 224; practically cured, 377; improved, 1727; results never recorded, 522; never returned, 226; ceased to return, 282; not improved, 86; and died, 27.

In 1905 the commission continued its work, and treated 18,865 cases, with the result that 5597 cases were reported as cured, 67 died, and the remainder, or 12,801 cases, were under treatment. They state that the large number of cases classed as being "under treatment" are practically cured, as they are relieved of most of their parasites as well as all their symptoms. A careful study of these cases showed that there were only 8.5 per cent which remained as dangerous as carriers of the worm or sources of infection as they were before the treatment commenced.

In 1906 and 1907 this good work was continued, and the grand total of 89,233 cases were treated, of which 22,936 were cured, 15,507 practically cured, 36,132 under treatment, 14,451 ceased to return, and 193 died.

The word "cured" means not only the disappearance of all symptoms of the disease, but also an absence of ova from the stools and a hemoglobin percentage of at least 85. "Practically cured" has exactly the same meaning, with the exception that the percentage of hemoglobin lies between 70 and 85. Undoubtedly the reasons why a large number of cases had to be classed as ceased to return is that the patients finding themselves relieved of their symptoms believed themselves to be cured and so saw no reason to present themselves for any further treatment.

It is not the purpose of this article to deal with microscopy, symptomatology, or pathology of this disease, but instead to review the treatment that has given such splendid results. It has had as its basis or principal object, in the first place, to remove the cause by the expulsion of the parasites. In those old and chronic cases in which the disease had reached a severe grade, a tonic treatment was also indicated. The commission has noted in detail the relative value of the drugs heretofore advised for the expulsion of uncinaria, and it has made the following report upon their value:

Thymol.—The mode adopted in the administration of this was the following: In the evening a dose of either magnesium or sodium sulphate was given; and when the latter was used, thirty grammes seemed sufficient, for to give more would often be to precipitate an exhausting diarrhea. The object of this preliminary purge was, of course, to empty the bowels, so that the anthelmintic would act upon the exposed intestinal mucous membrane. On the next day the patient was kept in bed without food until one o'clock, and two grammes of finely-powdered thymol was given in capsules at eight o'clock in the morning, the dose being repeated at ten o'clock. At noon another purge with salts was administered, this second purgation being of value in preventing the absorption of the thymol, to which either sodium or magnesium sulphate is an antidote. All solvents of thymol, such as alcohol, ether, glycerin, turpentine, chloroform, and the oils, are contraindicated during the time that it remains in the digestive canal.

The commission does not share the opinion of many as to the danger of administering thymol when given with a certain amount of precaution. It believes that the danger is greatly exaggerated, for no deaths are reported that can be directly attributed to the exhibition of this drug. Its tendency to irritate the mucous membrane is the only serious objection to its use that has been found, and observations convince the commission that it is not absorbed to any great extent. Some patients even vol-

unteered the information that they had gone for two or three days before a movement of the bowels had resulted, and that they had absolutely no symptoms of intoxication during this period. The drug was even used in 11 cases of uncinariasis complicating pregnancy, and in two of these cases abortion followed. One of these two abortions was possibly due to the thymol. In several instances it was exhibited to nursing mothers, without bad effect to either mother or child, and without serious diminution in the secretion of the milk. The majority of the patients had no symptoms from the drug, although a few did have dizziness, burning in the stomach, and a temporary increase in debility. The symptoms noted by Manson in his classical work, such as intoxication, with vertigo, excitement, smoky urine, etc., were not observed. In all cases in which the anemia was advanced the patient's health was built up as much as possible previously to the exhibition of the drug. Its effect on edematous persons is very marked, causing great increase in the edema, which may prove fatal from its extension to the brain or the lungs.

The dose was graduated according to the age, but more especially according to the degree of debility, and large doses were not always needed. The usual dose was, in the case of children under five years of age, one-half of a gramme; between five and ten years, one gramme; between ten and fifteen, two grammes; between fifteen and twenty, three grammes; between twenty and sixty, four grammes; and above sixty, two to three grammes. It was the general practice to administer thymol once a week as long as ova remained in the feces.

Upon careful study it was shown that this drug gives better results than any other remedies that have been tried, for after one dose 76.85 per cent of all uncinaria in the intestinal canal of the patient are expelled.

Male-fern.—This drug was found to be absolutely without value. An ethereal extract of male-fern from one of the most reputable German pharmaceutical labora-

tories was purchased in Porto Rico, but absolutely no results were obtained from its use. The commission then obtained a fresh solid extract, which gave no better results, although such effects as dizziness, etc., followed its administration. The highest number of uncinaria expelled by either of these preparations was eight, while a subsequent administration of only three-fourths of the usual dose of thymol brought away 3676 uncinaria in the same case. This is in direct variance with the results obtained abroad by the exhibition of this drug, for Bruns noted 21,612 cases treated with it, in which only from 15 to 30 per cent needed a second dose.

Betanaphthol.—This drug has proved very valuable, and ranks second to thymol. After one dose 72.24 per cent of all the uncinaria in the intestinal canal were expelled. It was administered just as was the thymol, save that two grammes was employed instead of four, and, with the exception of some dizziness, its use was in every way most satisfactory.

Eucalyptol.—The formula recommended by Philips (eucalyptus oil, 2.50 grammes; chloroform, 3.50 grammes; castor oil, 40 grammes) was tried in fourteen cases, the medicine being administered every two days. All the patients suffered from dizziness, fatigue, and a desire to sleep. Some of them had retching, and others fainting fits, so that it became necessary to administer stimulants to prevent a fatal result. This drug, which has proved efficacious in the hands of others, did not prove so in the practice of the commission, and it is of the opinion that its use is dangerous. What small value there is in its exhibition consists in the advantage to science of securing the parasites alive.

A most important detail in the treatment is the purge. Podophyllin is strongly recommended by German observers, and it was given a fair trial. One of the objects of this drug, as also of calomel, is to sweep out the large amount of mucus in the upper bowel, which of course covers the worm and acts as a protective to it against the anthelmintic. That podophyllin, in itself,

has absolutely no germicidal effect was clearly shown in the cases in which it was alone used, as no worms were expelled. A careful study of its use failed to show for it any noteworthy advantage over other purgatives.

Iron.—Many iron preparations were tried and found useless for the cure of anemia due to uncinariasis. It is only by expelling the parasites and freeing the body of their toxins that the increase in the blood-corpuscles and in the hemoglobin is obtained in a short period of time, and a tonic and stimulant acting upon the cardiovascular apparatus is found far more effective than any of the iron preparations.

As the commission noted at the beginning of its work, it was brought face to face with a frightful state of affairs. "In

valley, mountain, and coast alike it found a ghastly population, dragging out a miserable existence, and with a death-rate which has shocked all who have had occasion to learn of it. The number of children who have lost parents and most of their relatives is very large, and these pick up a living as best they can. Men who should be supporting their families are chronic invalids; and the families, also infected by the disease, are in a condition of misery beyond description." All this is changed now; and it has been truly said if the Spanish-American war had brought no other benefits in its train than those of the saving of life and suffering from yellow fever in Cuba and from uncinariasis in Porto Rico, it would have been well worth the cost of men and money it occasioned.

THE TREATMENT OF PELVIC ABSCESS.¹

BY FRANK C. HAMMOND, M.D., PHILADELPHIA,

Adjunct Professor of Gynecology, Medical Department of Temple College; Assistant Gynecologist, Samaritan Hospital.

The term "pelvic" abscess is rather an ambiguous one, as it may include all varieties of suppuration existing in any part of the pelvis, "from the tip of the vermiform appendix to the ischiorectal fossa." Some authors restrict it to collections the sac of which cannot be removed, and others again employ it to designate suppuration of the connective tissue only of the pelvis. In this paper it is restricted to intra- and extraperitoneal purulent collections in the pelvis which bulge or "point" into the vagina.

If the fluid in the sac formed by the peritoneum, pelvic organs, and false membranes is purulent, it should be evacuated. The question naturally arises, Shall this be done per vaginam or by the suprapubic route?

Pus demands early evacuation, and in the direction which gives the easiest approach and affords the best drainage. The mere

fact that an organ or cavity contains pus is not a positive indication for extirpation of the structures involved, even though it be lined with a mucous membrane.

The rational treatment of these cases of pelvic abscess is by incision at the most accessible point, and this is accomplished by vaginal section.

The following advantages are claimed for the vaginal in preference to the abdominal route:

1. The operation has the advantage of being rapid and invariably free from shock, and within the ability of every intelligent practitioner who appreciates and practices thorough antisepsis.

2. Recovery is less complicated and more rapid.

3. Drainage being "down-hill" is not opposed by the laws of gravity, and is more natural, safe, and copious.

4. It avoids the probability of ventral hernia, and the complications, accidents, and sequelæ incident to the suprapubic route.

¹Read before the Medical Society of the State of Pennsylvania, at Reading, Sept. 26, 1907.

5. The mortality is less than by the suprapubic route.

6. Permanent and complete restoration to health is the rule, while a secondary operation later is the exception.

The cases most likely to be entirely relieved by vaginal drainage are those in which there is a single well-defined collection of pus which can be evacuated completely. When the cellular tissue is more or less honeycombed with multiple abscesses, the progress of the cases will tend to be slow, and may require repeated incisions. Kelly reports one case in which it was resorted to five times before the patient was relieved.

Should a secondary operation by the suprapubic route become necessary, its performance will be more easily accomplished, and with less morbidity and mortality, on account of the freedom from pus and the improved condition of the patient.

The technique of the operation is as follows:

As a preliminary the bowels should be thoroughly evacuated. The pubis is shaved, the parts thoroughly washed, and a bichloride of mercury dressing applied and left in place until the patient is put upon the operating table. Upon the operating table the bladder is catheterized in order to assure its complete evacuation. The vagina and external parts are then scrubbed with a solution consisting of creolin or lysol 7.5 Cc. (3ij) and saponis viridis 60 Cc. (3ij) to a quart of hot water. This is followed with sterile water, then bichloride of mercury 1:1000, and finally alcohol. Retractors are then inserted, retracting the anterior, posterior, and lateral vaginal walls, which will afford ample room for operating.

Owing to the inflammatory processes and the adhesions the mobility of the uterus will be more or less limited, also to the degree to which it can be drawn down into the vagina. It may be absolutely fixed, and owing to the large accumulation of pus the cervix may be forced upward and anteriorly until it is hidden under the pubic arch. The

cervix is seized with a pair of double tenaculum forceps (preferably Jacob's, as these seldom slip or tear through). A transverse incision is then made through the vagina posteriorly close to the cervix, irrespective of whether or not it is the most dependent portion of the abscess. Then insert the index-finger into the incision and dissect slowly upward, hugging the posterior wall of the uterus until the finger breaks through into the pus sac. Occasionally the pus may be higher up; in such cases insert into the fluctuating area a pair of sharp-pointed scissors, open and withdraw. Having opened the abscess, in subsequently enlarging the opening it is safer to tear the tissues than to resort to a cutting instrument. There is less bleeding, and blood-vessels and other structures that may be injured are pushed out of harm's way. We prefer to irrigate all the cases after evacuating the pus, and have never seen any harm produced thereby. For this purpose normal salt solution is used. Formerly the cavity was packed with iodoform gauze, but for the past few years we have been using a T rubber drainage-tube, which permits of thorough drainage, and through which the cavity can be subsequently irrigated if occasion demands. Gauze packing is now limited to those cases in which oozing proves troublesome, or the abscess cavity is very small.

Be sure to open all the pockets of pus. The presence of other collections of pus is readily determined by making pressure with the external hand on any doubtful structures, holding them steadily, while they are carefully palpated by the finger in the sac. As soon as a well-defined fluctuating mass is felt, if there is no doubt of it being an encysted accumulation, its walls may be broken through with the finger and its contents evacuated through the main abscess cavity.

One must guard against evacuating pus into the general peritoneal cavity; but as the pus in most of these cases is sterile, this accident would not appear to be a serious complication. Kelly had this ex-

perience in 9 out of 65 cases, with no untoward symptoms subsequently. Under such circumstances it would be best not to irrigate.

In favorable cases the abscess cavity contracts in ten days to two weeks and will be practically obliterated, although of course there are cases which discharge for a longer period.

Under no condition is curetting the cavity permissible, because the thickness of the sac varies in different parts, and a perforation might be made unawares into the peritoneal cavity.

As soon as the temperature reaches normal, and the general strength of the patient permits, she may be allowed to leave her bed.

I am indebted to Dr. Wilmer Krusen for the privilege of reporting the following cases operated on by him in his service at the Samaritan Hospital:

M. P., twenty-four years of age, married, referred to the hospital by Dr. S. D. Addis, September 7, 1904. For four months she has had pain in the right inguinal region and in the back. Both inguinal regions were involved at first, but for the past few weeks the pain has become more intense in the right side. She has had no children. Last menstrual period July 27, 1904. On admission the pulse was 128, respirations 30, and temperature 102°. On pelvic examination a large fluctuating mass was found posterior to the uterus, pushing the cervix up under the pubic arch. Vaginal incision was made, the pus evacuated, and the cavity irrigated and packed with gauze. The patient was discharged cured October 10, 1904.

M. M., married, twenty-nine years of age, admitted to the Samaritan Hospital May 23, 1905. Six years ago she had a self-induced abortion, which required a curettage. For one week previous to admission to the hospital she had marked pelvic pains, accompanied with chills and fever. On admission the temperature was 103.4°, pulse 128, and respirations 28. A diagnosis was made of a small retrouterine

abscess, which was incised, irrigated, and drained with a T rubber drainage-tube. The temperature reached normal on the third day, and the patient was discharged cured on the seventh day.

D. H., married, thirty-one years of age, admitted to the Samaritan Hospital May 18, 1905. Had been in bed for one week previous to admission to the hospital, suffering with pain in the left inguinal region. Last menstrual period one week ago. Her urine had a trace of albumin and contained a few short hyaline casts. Hemoglobin was 90 per cent, red blood-corpuscles 4,000,000, and the leucocyte count 26,000. A diagnosis was made of a retrouterine abscess, which was incised, irrigated, and drained with a T rubber drainage-tube. The temperature reached normal on the fourth day, and she was discharged cured on the seventh day.

M. R., single, nineteen years of age, admitted to the Samaritan Hospital December 6, 1905. Six months previously she first noticed pain in the inguinal region and in the vagina; also dysuria. The medical attendant at that time made a diagnosis of appendicitis. During the past ten days she has had marked uterine bleeding, also chills and fever. On admission the temperature was 100°, pulse 114, and respirations 36. A diagnosis of retrouterine abscess was made, which was incised, irrigated, and drained with a T rubber drainage-tube. The temperature reached normal on the second day, and the patient was discharged cured on the eleventh day.

M. H., married, twenty-five years of age, admitted to the Samaritan Hospital November 11, 1905. For eleven days previous to her admission she had been confined to bed with dragging pains in the back and hypogastrium; also dysuria. A diagnosis was made of retrouterine abscess, which was incised, irrigated, and drained with a T rubber drainage-tube. Temperature on admission 101°, pulse 104, and respirations 24. The temperature reached normal on the fifth day, and the patient was discharged cured on the eleventh day.

F. C., married, twenty-seven years of age, admitted to the Samaritan Hospital February 4, 1905. On admission the temperature was 98°, pulse 95, and respirations 25. She simply complained of pelvic pain. Leucocyte count was 25,800. The retro-uterine abscess was incised, drained, irrigated, and packed with iodoform gauze. She was discharged cured on the sixth day.

E. M., married, twenty years of age, was admitted to the Samaritan Hospital January 31, 1906. During the past two years she has had constant pain in the left inguinal region. Confined to bed for past four days. On admission the temperature was 103.4°, pulse 108. She was markedly septic, and had a retrouterine pus accumulation bulging into the vagina and extending half-way to the umbilicus. This was incised, the cavity irrigated, and a T rubber drainage-tube inserted. Owing to the septicemia this patient ran a fluctuating temperature for twenty-four days before it reached normal. She was discharged cured February 26, 1906.

E. W., married, admitted to the Samaritan Hospital February 28, 1907. Ten days ago first noticed pain in umbilical region, persistent and severe. About three days it localized itself in the right iliac region. This was accompanied by chills, fever, nausea and vomiting, and prostration. Temperature on admission was 101.2°. A large retrouterine accumulation of pus was found, incised, the cavity irrigated, and a T rubber drainage-tube inserted. The temperature reached normal on the seventh day. Owing to the markedly asthenic condition of the patient she was not discharged until March 30, 1907.

R. E., married, twenty-five years of age, admitted to the Samaritan Hospital March 22, 1907. Three days previously she complained of pain in both iliac regions, which was partially relieved by treatment, then increased in severity, and gradually spread over the entire abdomen, accompanied by chills and fever. Temperature on admission was 102.2°, pulse 108. A retrouterine

pus accumulation filling the pelvis was found; this was incised, irrigated, and a T rubber drainage-tube inserted. The temperature fluctuated for twelve days, when it reached normal. She was discharged cured April 13, 1907.

B. B., single, twenty-six years of age, admitted to the Samaritan Hospital October 18, 1906. A few days previously complained of severe lancinating pains in right lower abdomen. Eight weeks before, she first noticed bearing-down pains, and a dull, boring "ache" in the left lower abdomen. Has had leucorrhea for some months. The blood analysis was as follows: October 18, 1906, hemoglobin 70 per cent, white blood-corpuscles 20,000; October 25, 1906, white blood-corpuscles 28,000; November 17, 1906, white blood-corpuscles 16,000; December 2, 1906, hemoglobin 70 per cent, white blood-corpuscles 15,000. A diagnosis was made of a very large pelvic abscess extending to the umbilicus. General condition of patient was one of marked septicemia. Operation October 29, 1906. Incision through posterior fornix into abscess sac, evacuating a large quantity of pus. With a finger in this cavity and a hand over the abdomen a pocket of pus was detected on the right side of the pelvis; this was opened and evacuated. Another pocket was found on the left side and treated in the same manner. After thorough irrigation a large T drainage-tube was inserted. Owing to the septicemia this patient was not discharged until January 17, 1907.

L. K., single, seventeen years of age, admitted to the Samaritan Hospital May 31, 1906. No history obtainable. Hemoglobin 100 per cent, red blood-corpuscles 4,300,000, white blood-corpuscles 18,000. Temperature 100°, pulse 126, respirations 28. A diagnosis of pelvic abscess was made and treated as in the above cases. The temperature reached normal in twenty-four hours, and the patient was discharged June 14, 1906.

1419 TIOGA STREET.

REPORT OF SIX CASES OF GONOCOCCIC ARTHRITIS TREATED WITH ANTI-GONOCOCCIC SERUM.

BY DR. ABRAHAM PEREZ-MIRO,

Chief of the Laboratory of Therapeutics, Havana Faculty of Medicine, Havana, Cuba.

The following case reports briefly summarize the points of practical interest concerning the method of applying antigenococcic serum and the results obtained therefrom:

Case 1.—S. G., twenty-eight years old, contracted gonorrhea in 1903. Thereafter he suffered from many recurrences until September, 1907, when in the course of a moderate discharge there developed redness, swelling, and severe pain in the right ankle. In addition to the internal treatment by balsams, local applications were made of hot lotions of salicylic acid, alcohol, and water, vesicants, and tight bandages, which were loosened from time to time. At the time the treatment with antigenococcic serum, P. D. & Co., was instituted, the patient was suffering with burning pain in the articulations, with immobility and rigidity.

On November 19 an intramuscular injection of one cubic centimeter of antigenococcic serum was given in the right gluteal region, all other treatment being suspended. The next day the pain was less, as were all the local symptoms of inflammation. Moreover, there was slightly increased articular movement. The right inguinal region became slightly sensitive to the touch. A second injection of one cubic centimeter of antigenococcic serum was made, and this two days later was followed by a marked amelioration of all symptoms, the patient being able to bear his weight on the foot without pain, though he was unable to walk, the ankle remaining rigid and the tendo Achillis sensitive. About the point of the second injection erythema developed, covering the whole of the left buttock. This was not attended either by local pain or by elevation of temperature. Three days after the second injection a third was made of two cubic centimeters of anti-

gonococcic serum. This was shortly followed by increased pain in the ankle, lasting for about half an hour. The next day the patient felt better than at any time since the first appearance of his articular symptoms. There was a further erythematous manifestation about the point of injection. Three days after the third injection a fourth treatment of two cubic centimeters of antigenococcic serum was administered, and on the following day the dose was repeated. There followed a slight increase of pain, which possibly could have been attributed to the damp weather. Thereafter improvement in both sensation and power occurred, and subsidence of all inflammatory phenomena. Lotions of salicylic acid, glycerin, and water were applied to the seat of pain.

Three days after the last injection treatment was repeated, two cubic centimeters of the antigenococcic serum being used. The report of that day is to the effect that there was no pain; the patient was able to bear a little weight on the foot, but could not walk. Two days later the injection was repeated. There was a steady improvement, and the following day the injection was again repeated. The patient could walk with the aid of crutches, bearing a little weight on the foot. The treatment was continued for several days, when some slight stiffness of the ankles was noted, but no pain. An injection was made of two cubic centimeters of fibrolysin, Merck (a combination of sodium salicylate and thio-sinamine). Two days after this the movements were practically complete. There was no pain and the patient could walk unaided. The fibrolysin injection was repeated and was followed by improvement. The patient was directed to be massaged three times during the day with ointment composed of methyl salicylate 10 grammes and lanolin 40 grammes. Because of re-

currence of pain in the interior of the articulation blisters of cantharides were ordered. These were applied for three hours and the vesicants were allowed to reabsorb. Thereafter there was continued improvement in spite of a severe attack of influenza with fever, until at the time of reporting the patient was considered cured of blennorrhagia and the articular complications, but was kept in the hospital for internal treatment with perchloride of iron and nutritive diet, massage and exercise for the foot, and warm baths.

Case 2.—J. V., a Cuban mechanic, nineteen years old, in September, 1907, suffered from symptoms of beginning gonorrhea, for which he was treated internally with balsams and locally with urethral injections. In October orchitis developed, discharge from the urethra almost completely ceasing. The 5th of November he complained of burning pain in all the joints of the middle finger of the left hand, in the left elbow and left ankle. The 25th of November there was recurrence of discharge. When he entered the hospital he was suffering from constipation, coated tongue, anorexia, tachycardia, asthenia, painful discharge, and inability to micturate. The case was diagnosed as a localized gonococcic articular infection, and was treated on November 28 with antigenococcic serum. This was followed the next day by less pain in the finger and ankle-joint. Swelling at the elbow, however, produced intense, burning pain, and the patient suffered much pain in the left arm. Thereafter two cubic centimeters of antigenococcic serum was injected, three grammes of sodium salicylate being given internally during the day. Moreover, there was an application of methyl salicylate and lanolin. In the night the muscular condition disappeared, the condition of the fingers became distinctly better, and the patient suffered less in his elbow. November 30 two cubic centimeters of antigenococcic serum was injected. There was at this time no discharge, pain in the elbow was less, and there was general improvement in the patient's condition.

December 1 two cubic centimeters of the serum was injected, and the notes at this time state that all the symptoms were improved, excepting those located in the right wrist, which began to swell.

December 2 two cubic centimeters was injected; on December 3 a further dose was given. The pain in the left wrist was at this time marked, but the general condition of the elbow was improved, though this joint could not be moved without help. The patient requested permission to leave the hospital, and was discharged on this day with directions to take daily two grammes of salicylate and to employ an ointment of methyl salicylate with lanolin over the seats of pain.

Reporting on December 7, the patient stated that he had suffered severe pain in the arm on the day of his discharge from the hospital, but otherwise his improvement had been marked.

December 13 the patient was no longer confined to bed, fever and pain had all disappeared over the right elbow-joint, and there remained a slight urethral discharge without pain.

On December 20 the patient returned to the hospital, and an examination showed the arm rigid in flexion, without pain. On the injection of two cubic centimeters of antigenococcic serum and application of the faradic current to the arm the urethral discharge slightly increased. The patient was given six capsules of arheol; the next day repetition of the antigenococcic serum and the application of the faradic current. Improvement was noted in the movements of the joint. The general condition was entirely satisfactory.

December 22 two cubic centimeters of antigenococcic serum was injected, an electric current was applied, and six capsules of arheol were given. Locally the urethra received three injections of Ricord's prescription (zinc sulphate and lead acetate, etc.). This patient returned home with practically free painless movement of the arm, quite cured.

Case 3.—G. O., twenty-four years old,

commercial traveler, in September, 1907, began to suffer from malaise, lassitude, and anorexia, together with burning pains and rubefaction about the ankle-joint. About twelve days after the first definite symptoms appeared he came to the hospital for consultation, and was given sodium salicylate 1.50 grammes per day, ointment of methyl salicylate and lanolin applied to the seat of pain, six capsules of arheol, and lactovegetarian diet. This patient showed no improvement up to December 5, when two cubic centimeters of antigonococcic serum was injected into the upper part of the right thigh. This, being followed by no betterment, was repeated December 8, injection being driven into the calf of the right leg, and again December 9, together with 3 grammes of sodium salicylate given by the mouth and a vesicant, the latter being allowed to reabsorb. December 10 the pain was less severe in the foot and was more pronounced in the inguinal region. December 11 there was no discharge, but continued inguinal pain in the right side. December 13 the pain in the foot ceased, the joint remained stiff, and the inguinal pains had entirely disappeared. The vesicant was applied to the ankle for four hours as before.

December 14 there was return of pain, and on the 20th of December two cubic centimeters of antigonococcic serum was injected, since pain and swelling persisted in the ankle. On December 21 pain returned to the inguinal region, but the condition of the foot was greatly relieved. Antigonococcic serum, two cubic centimeters, was given, and the methyl-salicylate and lanolin ointment applied. The next day there was marked improvement in the foot and the urethral discharge had ceased.

December 24 there was little pain, though there still existed some inflammation in the ankle. Later in the day muscular pains developed in both legs, and sodium salicylate was given during the day.

On December 30 the vesicants were used as before, the internal treatment of sodium salicylate having been continued. During this period the pain had gradually lessened.

January 12 the patient was able to walk without serious discomfort, though the ankle was weak and stiff and he was compelled to use canes. He was therefore given an injection of two cubic centimeters of fibrolysin. On January 16 the injection of fibrolysin was repeated. The condition was satisfactory on January 23. On this date he was given sodium salicylate 3 grammes and a light application of tincture of iodine to his ankle. The notes of his case state that this patient may be considered cured of blennorrhagia and its articular complications.

Case 4.—E. S., twenty-nine years old, contracted gonorrhea in 1905, which was apparently cured in two months' treatment. In September, 1907, two years after this first attack, he commenced to suffer from intense pain in the middle of the back and in the right ankle, so severe as to cause him to enter the hospital for treatment. As there was no discharge present and no enlargement of the ankle, and as there had been no rheumatic antecedents, it was not supposed that this attack was due to gonorrheal infection. Therefore the patient was given sodium salicylate internally and vesicants as already described. After two days of this treatment discharge began to flow from the urethra, and general treatment with balsam and Ricord's injection was ordered. From this time the patient gradually improved, and was able to leave the hospital in November, experiencing some pain on moving his legs. For this capsules of thiodine, Cognet (an iodine-thiosinamine preparation), fibrolysin or thiosinamine not being obtainable, were prescribed.

On December 7 the treatment was suspended and two cubic centimeters of antigonococcic serum injected into the right gluteal region. The first injection was followed by the immediate disappearance of pain, nor at the time of the report had there been any recurrence, and the patient was considered cured.

Case 5.—R. P. F., clerk, twenty-five years old, contracted gonorrhea in September, 1907, this being the second attack, the

first attack having been complicated by orchitis. November 12 he exhibited symptoms of orchitis and funiculitis, with high fever, marked swelling and throbbing sensation in the left testicle.

November 20 he entered the hospital and had applied a lotion of alcohol, salicylic acid, and tepid water, the testicle being well supported. A milk diet was instituted.

December 9 two cubic centimeters of antigonococcic serum was injected. The following day there was less pain and swelling in testicle and a profuse discharge from the urethra, with burning sensation, as if from a recently contracted case. This day the injection was repeated. December 11 there was less pain and swelling and the discharge had been reduced. December 13 there was a betterment in all directions. The patient then left the hospital, being directed to walk as little as possible and to take six capsules of arheol daily.

Case 6.—E. A., female, thirty-eight years of age, giving a history of having had a number of children who all died at an early age, presented herself at the clinic in November, 1907, with the skin manifestations of syphilis and complaining of burning pain in the urethra, from which there was a purulent discharge. Menstruation had been abnormal for some time, this function having been too frequent and prolonged. The cervix was found eroded and bleeding and the os obstructed with an accumulation of pus. The uterus was distinctly enlarged.

The treatment consisted of thorough cleansing of the vagina and uterus, the application of a vaginal tampon saturated with glycerin, and internally capsules of salol and santal. The inflammatory phenomena subsided under this treatment, which was combined with injections of mercury biniodide for the purpose of combating the skin lesions of the specific infection. The burning pain in the urethra persisted, and the purulent discharge therefrom was markedly acute. Injection of two cubic centimeters of antigonococcic serum was immediately followed by a profuse discharge of pus. The second injection was administered, followed again by

greatly increased purulent discharge, with the development of erythema around the point of injection. Later the discharge became watery and turbid. Internal treatment was continued, until the case, which according to the patient was of many years' standing, was completely cured.

From the foregoing clinical reports I cannot as yet make any definite deductions as to the efficacy of antigonococcic serum (P. D. & Co.) in the treatment of gonococcic complications, on account of the comparatively small number of cases treated. I hope to be able to continue the work, and in that case will be able to advance a more authoritative opinion.

However, for the present, the following observations may be made as bearing on the above experiments:

1. On the day following the first injection of serum the urethral discharge has been observed to materially increase and to take on a pronounced blennorrhagic character in regard to consistency and the burning pain which has accompanied it, except in Case 4. This increase has not occurred after subsequent injections, but begins to decrease and finally disappears, whether due to the sole action of the serum (Cases 1 and 3) or to the simultaneous action of both internal treatment and serum (Cases 2, 4, and 6).

2. The action on inflammatory conditions of the articulations (Cases 1, 2, and 3) and of the testicles (Case 5), also in alleviating general conditions of pain (Cases 1 to 4 inclusive), is quite marked and much more prompt and effective than with other methods of treatment.

3. It causes the return of articular functions (Cases 4, 5, and 6), or materially aids in the action of sodium salicylate, vesicants (isopathic method), and fibrolysin, Merck (Cases 1, 2, and 3).

4. The injection is free from pain and has produced no reaction, except as noted in Cases 1 and 2.

5. Antigonococcic serum has not been employed in acute urethral blennorrhagia, nor do I think its use necessary in such cases.

THE WIRING OPERATION IN THE TREATMENT OF ANEURISM OF THE AORTA.¹

BY H. A. HARE, M.D.,

Professor of Therapeutics in the Jefferson Medical College and Physician to the Jefferson Medical College Hospital.

There are several points that I wish to bring before the College, not so much in the description of the operation itself as in regard to the remarkable results which follow.

The first and most definite result which follows the wiring operation in every case in which I have performed it, or seen it performed, is the remarkable diminution in pain which takes place, the patient, usually before the operation is finished, stating that pain is very greatly decreased, whereas one would suppose that the introduction of a large needle and a number of feet of wire would produce a degree of traumatism which for the time being would cause an exacerbation of pain.

A second noteworthy point is the diminution in the patient's dyspnea, or rather in the symptoms of pressure before the operation is finished. In the case of a man seen at the Hotel Walton with Dr. Musser, the suffering was so great that the patient said: "I want to say to you that whatever your decision is, if this thing is not done I intend to kill myself, for I will not spend another twenty-four hours suffering this agony, both as to the difficulty in breathing and as to pain." Before the electricity had been passing through the tumor for fifteen minutes the patient expressed himself as wonderfully relieved.

The next point of interest is the fact that, so far as I know, in some sixty odd operations of this character performed and recorded there is not a single instance in which an accident has occurred during the operation. In no instance has there been rupture of the sac or the sweeping off of a loose clot producing a secondary lesion. In Dr. Musser's case to which I referred, a very interesting coincidence occurred. The operation was to have been performed at 12 M. on Wednesday. A few

hours before the patient became partially hemiplegic and aphasic. The condition was undoubtedly due to embolism, because later on it entirely disappeared. If the embolism had developed after the operation it would have been attributed thereto.

Another point is that the operation is never permanently curative, except in those rare instances in which, as the result of trauma, one single portion of the aorta is seriously damaged. In the vast majority of cases in which aneurism occurs it takes place as a manifestation of general vascular disease, and the history of all the cases I have operated upon, and of all I have seen reported, has been that sooner or later after the wiring the adjacent tissues of the blood-vessel have given way. The proposition is similar to that of mending a piece of rotten hose: when it is mended in one place pressure causes it to break in another.

There are many cases on record in which life has been prolonged for considerable periods of time in comfort and usefulness to the patient by the performance of this operation. A patient of the late Dr. D. D. Stewart lived for a little over three years following such an operation, and died of alcoholic pneumonia and not because of the aneurism.

In the case operated upon for Dr. Musser, two years ago in April, although the man was in such distress from dyspnea he recovered sufficiently to return to South Carolina. Although he was on his back for a period of six months after the operation he constantly attended to business. Last October he passed through this city on the way to New York, where he actively engaged in business. At that time Dr. Newcomet radiographed him again, and the picture showed excellent effects. The man returned here about six weeks ago, and was seized with an attack of grippe. He developed an acute pulmonary edema, either as the result of the grippe or of the aneur-

¹Part of a symposium on this topic before the College of Physicians of Philadelphia.

ism, and died in the course of a week or ten days. An autopsy was not obtained.

The case operated on with Dr. Fussell was the only one in the descending aorta and going through the back that I have wired. This patient lived four months and died from pressure and exhaustion.

Another point is the exercise of great care that the needle is not pushed at the time it is inserted, or later, by inadvertence, so far into the aneurismal sac that the shoulder of the needle comes in contact with the skin. The shoulder of the needle is never insulated, and if the greatest precaution is not taken an electrolytic burn will result. A slough takes place which decreases the strength of the aneurismal wall, and in one case which I operated upon death came because of this accident. I was called out of the operating amphitheater to answer the telephone when the operation was about half over. The assistant pushed the needle in too far and burnt the skin. The man returned to his home in the South, but ultimately died by losing an enormous worm-like mass of clot three or four times a day through this opening in the skin. The aneurism had developed not as the result of arterial disease but of an injury sustained by being thrown from his horse, striking on the pommel of the saddle.

In one instance only have I wired the innominate artery. The man died four months afterward as the result of pressure symptoms and exhaustion.

I have used gold wire in all my cases. I am not in a position to criticize silver, but I imagine that it has one advantage and one disadvantage. The advantage is that it is a little easier to handle, and the most delicate part of this operation is the introduction. The soft gold wire is very apt to buckle. On the other hand, when the wire gets into the mass, I should imagine that the gold wire would better adjust itself to the uneven surfaces of the sac than would silver. Usually from 70 to 80 milliamperes are employed, and the operation continued for not less than from fifty minutes to an hour. The hardening of the clot does not take place for several days or weeks. In

the last case seen by me, in which I assisted Dr. J. Chalmers Da Costa, the man expressed his relief within ten minutes after the electrical current was passed through the wire. In the operation which I performed on the innominate aneurism, although the autopsy was made by a most competent, skilful, and experienced pathologist, and although no less than 18 feet of gold wire was inserted, not a trace of gold wire could be found in any portion of the patient's body.

OPHTHALMIA NEONATORUM.

In the *Buffalo Medical Journal* for January, 1908, LEWIS gives the following advice as to what should be done to combat this dangerous menace to child and adult life:

1. Secure the enactment of laws in each State or Federal territory placing the supervisory control and licensure of midwives with the boards of health; requiring that these unqualified practitioners be examined and registered in each county and that they be compelled to immediately report each case of ophthalmia occurring in their practice, under penalty, if found guilty, of forfeiture of their license and a fine.

2. Distribution by health boards of circulars of advice to midwives and mothers giving instruction as to the dangers, method of infection, and prophylaxis of ophthalmia neonatorum.

3. The preparation and distribution by health boards of ampoules or tubes, containing the chosen prophylactic. For midwives one-per-cent solution of nitrate of silver is almost universally recommended by obstetricians and ophthalmologists. For physicians the Credé solution should consist of a two-per-cent solution of chemically pure fused nitrate of silver. If used as directed by Credé, one drop from a glass rod one-eighth of an inch in diameter, it is free from excessive irritation and absolutely safe. To insure purity of the drug and accuracy of dosage the Credé solution should be given freely to physicians who make application therefor. This, however, should be

merely advisory. The health department should be free to use such prophylactic as it may deem best.

4. Periodic report to boards of health by all physicians engaged in obstetrics of the number of cases of ophthalmia neonatorum that have occurred in their practice, whether or not a prophylactic was used—and if so, what—together with the result.

5. The accomplishment of these measures by the appointment of committees through the various State and county societies whose coöperation would make concerted action possible.

6. To secure these ends the requested coöperation of the American Association of Obstetricians and Gynecologists, the Academy of Ophthalmology and Oto-Laryngology, the American Ophthalmological Society, the American Public Health Association, and such other organizations as may appoint committees on ophthalmia neonatorum.

If this plan of campaign be agreed upon, with such modifications as obstetricians, ophthalmologists, and sanitarians may suggest, then a united and coördinated effort should be made to carry it into effect. If we would protect the babies—future citizens of the United States—from the poverty and misery of needless blindness, we must join hands and form a cordon reaching from Maine to Alaska and from the Great Lakes to the Gulf. The machinery is already in existence. It is but to act.

LOCOMOTOR ATAXIA: ITS EARLY RECOGNITION AND GENERAL MANAGEMENT.

In the course of an article on this topic in the *British Medical Journal* of December 28, 1907, DENT has this to say in regard to treatment:

Potassium iodide and mercury have been largely given, but most authorities agree that they have not much influence over the lesions of the disease. If the case is seen in an early stage these remedies should be used, and if a history of syphilis can be elicited, and especially if the primary in-

fection occurred within, say, two years of the onset of tabetic symptoms, or if there has not been early and thorough treatment of the syphilis, they should be administered perseveringly. Potassium iodide may be combined with colchicum and alkalies when the pains are severe. Silver nitrate given in $\frac{1}{4}$ -grain doses for a long time often relieves and lessens the frequency of the pains, and may do some permanent good. Aluminum chloride may be given two or three times a day, and certainly with benefit, especially for the pains. Zinc phosphate is beneficial in some cases. Gold chloride has been used with good effects. Arsenic should be pushed, and its general tonic effect is undoubtedly of service; its combination with iron is sometimes advisable. Strychnine is a remedy constantly employed for the tonic effect and is often of service. Ergot may be used in acute and subacute attacks, and it is recommended by Charcot for urinary troubles. Cannabis indica is serviceable in some cases for the relief of the pains. Calabar bean has some influence in improving muscular power and in retarding wasting in paralysis. Phenacetine and lactophenin are very useful for the relief of the pains, and also for control of crisis, and may be repeated. Antipyrin is used by many, but it is not without danger in large doses; an attack of pain will often yield after three or four doses of ten grains given at intervals of an hour. Sodium salicylate is worthy of trial when the pains are much in evidence. Nitroglycerin is very useful if there is increased arterial tension, when it may be given for a long time in increasing doses, with much benefit in relieving the crises and lessening the pain. Morphine is a remedy the use of which it is advisable to postpone as long as possible, but it may be a necessity if the distressing pain resists all other treatment; the smallest dose which will afford relief should be administered in the form of hypodermic injection. Sometimes it is also required for the gastralgia. Testicular juice, spinal cord, brain substance, spermin, have been tried, but with very unsatisfactory results.

EDITORIAL.

THE THERAPY OF HIGH ARTERIAL TENSION.

We have often written of the importance of paying careful attention to the study of arterial tension in all patients who come under observation, because a careful study of this state will frequently provide valuable information both as to prognosis, diagnosis, and treatment. A constantly maintained high arterial tension in an adult is nearly always indicative of a distinct pathological process in the cardiovascular or renal system, and is often the result of pernicious habits, or of infection, at some previous time, by syphilis or by one of the more acute infectious diseases. An estimation of the arterial tension also gives us some conception of the work which the heart is called upon to perform, and of the readiness with which the interchanges between the tissues and the contents of the blood-vessels can take place. The discovery of high tension frequently explains the cause of a more or less persistent dyspnea, the cause of attacks of faintness and vertigo, and it not rarely gives warning of the presence of chronic contracted kidney or of a threatened apoplexy.

In this connection the two causes of high arterial tension must be recalled. Thus we meet with vascular spasm produced by the presence of poisons which, directly or indirectly, cause contraction of the muscular coats of the vessels, and secondly, fibroid changes in the walls of the smaller vessels. These changes interfere not only with the ready passage of the blood from the larger arteries into the capillary networks, but they also impair that most important vital function of the vascular system, namely, the ability to vary its caliber instantaneously according to the demands made upon it and upon the heart, so that in some instances when one vascular area is constricted another vascular area, by relaxing, may equalize pressure and diminish cardiac labor.

It is an encouraging sign of the times that physicians are recognizing the importance of this factor in acute and chronic diseases more and more, and we constantly see, in the English-speaking journals in particular, whether they be published in England or America or in the British colonies, carefully prepared articles illustrating the importance of the subject of which we speak. Thus we have noted with interest an article upon high blood-pressure by Mr. Mills, who is a medical tutor in Sydney University, New South Wales, in the *Australasian Medical Gazette* of January 20, 1908. He discusses first of all the relationship between high blood-pressure and the heart and respiration; then its relationship to arteriosclerosis and granular kidney; thirdly, the effects of diet upon high blood-pressure; and lastly, the effects of some drugs upon this condition. We note with interest that, as a rule, he seems to have been disappointed in the therapeutic measures which he has introduced for the reduction of a blood-pressure when he has considered it abnormally high. His experience as to diet has been that cutting off all nitrogenous foods does not materially reduce the pressure in those cases in which the systolic pressure is as high as 160 millimeters of mercury. This may be true, but we think that there can be little doubt that it is wise to limit the quantity of nitrogenous foods in these patients; particularly if they are in the habit of leading sedentary lives and eating an excess of proteids. Not that we expect to produce a great diminution of blood-pressure by such dietetic restrictions, but rather to aid in the prevention of still greater pathological change. In other words, a carefully regulated diet in such cases is to be used more as a prophylactic to prevent an increase of tension than with any idea that conditions already in existence will be modified.

As to the use of drugs, we are somewhat surprised to find that Mr. Mills has also

been disappointed. Perhaps this is due to the fact that his comparatively brief experience has nullified the teachings of some therapeutic optimist, who, it may be, led him to believe that drugs could be more largely relied upon than is justified by experience. Undoubtedly a certain proportion of cases fail to respond to remedies which are known to possess the power of lowering blood-pressure, because the chief pathological state is one of fibrosis and of tortuosity and fixation of the vessel walls, and therefore no drug which relaxes spasm, as do the nitrites, can be expected to produce material results. Indeed, it may well be said that the degree to which we can lower arterial pressure when it is abnormally high by the use of the nitrites depends entirely upon the degree of vascular spasm which is present. A large proportion of cases suffer from both spasm and fibrosis. If the spasm is the dominant factor, much good can be achieved by the use of the nitrites, whereas if fibrosis is almost the sole cause of the high pressure treatment produces little result.

Of the remedies which are most commonly employed and which Mills has found most useful we have the iodides, nitroglycerin, and nitrite of sodium. The first class of drugs do not have any very immediate and direct effect upon vascular tension, but can be relied upon, if given for a long period of time, to do far more than the nitrites in those cases in which fibrosis is the cause of the high pressure, particularly if syphilis or gout is the underlying dyscrasia.

There can be little doubt, we think, that in many instances disappointment follows the employment of nitroglycerin either because it is not given in sufficient dosage and sufficiently frequently or because stale preparations are employed which have undergone chemical change, and which therefore are far weaker than freshly prepared solutions or tablets or pills containing this substance. In other words, many a physician who thinks he is giving 1/100 of a grain of nitroglycerin at a dose may be in reality administering only a 1/200.

This is particularly the case where tablets are employed which are not coated in such a way as to protect their contents. Then, too, it must be remembered that nitroglycerin while powerful is nevertheless fleeting in its influence, and in all probability rarely exercises an effect which extends over a period greater in duration than an hour. To give this drug three times in the twenty-four hours in a case of high arterial tension cannot produce good results. It were better to give smaller doses every two or three hours than to give it every eight hours. For these reasons there are certainly many great advantages in the employment of nitrite of sodium, since its influence is much more prolonged and it is a much more stable compound while kept on the shelf, although if exposed to the air it deliquesces gradually and oxidizes and becomes unfit for use. Furthermore, it would seem that it is much less apt to produce headache and other disagreeable symptoms characteristic of the overeffects of the nitrites because it acts so slowly. The dose varies from 1 to 2 grains.

Mills says that of all the drugs which lower arterial pressure the most valuable is morphine or opium. Any relief which ensues upon the administration of such a remedy must occur as a result of nervous sedation with consequent relaxation of spasm, since morphine surely cannot affect blood-vessels which are fixed as a result of fibroid change, but the value of nitroglycerin and morphine, when given hypodermically, in attacks of angina pectoris and other conditions characterized by vascular spasm is, of course, known to every one.

Finally, we have failed to touch upon one of the most important, if not the most important, factors in the treatment of cases of high tension, whether they be due to spasm or fibrosis, namely, rest in bed with the giving of massage. By this means the heart is rested, the peripheral capillaries are made more elastic and pliable, and opportunity is given to the system to eliminate poisons, while at the same time the eliminating organs receive an adequate

blood-supply for the performance of their normal functions. Such a rest is particularly essential in cases which are subjected in their ordinary pursuits to great stress and strain.

It is interesting to note in this connection that Cook, of Minneapolis, publishes in the *Journal of the American Medical Association* of February 29, 1908, an article upon this same subject, in which he strongly recommends sodium nitrite as the best vasodilator on the ground that it has the most enduring effects and is more stable and dependable. We are glad to see that he emphasizes the fact the existence of which we have asserted on a number of previous occasions, namely, that care must be exercised in a certain proportion of cases that high arterial tension be not reduced too rapidly.

THE' RELATION OF VITALITY TO PROGNOSIS AND TREATMENT.

Few members of the medical profession, who are possessed of experience, can have failed to note on many occasions in their career instances in which persons of seemingly little vitality have withstood the onset of grave infections or serious injury with comparative impunity, while those who in every respect seemed most robust and healthy have gone down to death with a readiness which has carried terror to the mind of the observer. There can be no doubt that in some respects our conceptions of vitality are distinctly erroneous, and that our knowledge concerning the tenacity of life, as it has been called, is distinctly limited. How often do we see chronic invalids survive an attack of influenza or typhoid fever at the same time that the heartiest member of the family succumbs, and how often do we also see seemingly puny children withstand illness after illness while others more robust succumb in a few hours. Again, how often we are perplexed by seeing those who are manifestly desperately ill survive, while others presenting no symptoms at the moment which cause alarm suddenly pass away without warning. We think it may be said without fear

of contradiction that the longer the physician is engaged in practice the more timid he becomes in making a prognosis as to recovery, and particularly is he wary as to statements concerning the possible duration of life in the presence of a manifestly fatal malady.

All these factors not only are, to a large extent, an unknown quantity, but they also very considerably govern the results which are obtained by treatment, whether that treatment consists in the administration of drugs or in the employment of remedial measures other than drugs, and there can be no doubt that in many instances physicians credit a drug with the survival of the patient in one case and cast discredit upon it with the death of a patient in another instance, when, in reality, it is a variation in the vitality of the patient rather than in the efficacy of the drug which is the factor of importance. In other words, while it behooves us, on the one hand, to employ drugs with out utmost skill, and again as far as possible with a clear conception of their value, it also behooves us, in the humility which is nearly always characteristic of the scientist, not to be too boastful of our successes, and not to be too cast down by instances in which our efforts have failed.

Aside from the fact that these matters are continually brought to our notice in every-day practice, our attention has been once more called to this subject by a very excellent letter sent to the *Boston Medical and Surgical Journal* of February 6, 1908, by its Paris correspondent, who has on previous occasions contributed to the pages of this journal material which we have taken pleasure and profit in quoting. He says in this letter that it has never ceased to be a marvel to witness the diversity of manner in which different human beings behave as regards their resistance to dissolution; that some people appear to succumb so easily in face of disease that their dissolution seems to be about as simple as the blowing out of a candle; whereas, on the other hand, other people, aged, weak, with apparently no power of resistance what-

ever, put up such a fight against illness that it seems as though nothing could kill them. He then cites a number of instances in his experience illustrating these two sides of the question of vital resistance, and also quotes a number of surgical cases which certainly are most extraordinary. Thus, from the surgical standpoint, he cites an instance reported by André to the Academy of Medicine of Paris in December, of a youth of seventeen whose left hand was caught by a transmission belt in such a way that in a flash his entire arm and scapula were ripped off from his thorax, the clavicle remaining in place. Shortly after a surgeon saw him, found no immediate hemorrhage and no particular traumatic shock, but he tied the subclavian artery, trimmed the edges of the wound, brought together the edges of the skin, and the patient recovered entirely in two weeks. Berger also reported another case, and attention was called to a third one in which a man of twenty-five while cleaning a drum over which passed a wire rope suffered from exactly the same injury. Pressing his left hand to the torn surface, which was bleeding profusely, he went down several flights of stairs until he found a comrade, who tightly bound his thorax with a long white flannel belt, and took him to a hospital. On arriving there the hemorrhage had ceased, the wound was trimmed, the skin sutured, and the man recovered in two weeks, notwithstanding the severity of the trauma and the infection of the wound by his filthy left hand.

Yet who of us has not met with cases in which death has followed so slight a malady or injury that it has seemed incredible that the vital spark could be so easily extinguished?

RHUS POISONING.

There are few conditions so commonly met with by general practitioners as the dermatitis which is produced by contact with poison-ivy, or *Rhus Toxicodendron*. We called attention some years ago in the pages of the THERAPEUTIC GAZETTE to a research

by Pfaff, of Boston, who found that the irritating and poisonous properties reside in the alcoholic extract of the leaves and stem, and who thought the poisonous body to be of the nature of a non-volatile oil. It has, however, recently been proved by Syme that the active principle is really a glucoside.

The *Journal of Infectious Diseases* of November 15, 1907, contains the report of a research carried out by Ford in the Bacteriological Laboratory of Johns Hopkins University in which he has found that it is possible to produce an immunity to the poison of *Rhus Toxicodendron* in a manner similar to that immunity which is caused by the development of antitoxic substances for the combating of infectious diseases. This discovery on his part is important from two points of view: First, because it has been commonly held heretofore that antitoxins could only be produced from a body supposed to be proteid, or proteid derivative, in its nature. Ford, however, points out that many individuals who have been severely poisoned by poison-ivy after a certain number of attacks become immune to it, and some patients even claim immunity after one severe attack. Ford quotes Syme as stating that after four or five months of repeated experiments upon himself, with the glucoside which he isolated, he became no longer susceptible to the poison, although originally his skin had been extremely sensitive.

For the purpose of the experiments which he desired to carry out Ford tells us that he employed the alcoholic fluid extract of *rhus toxicodendron* placed upon the market by Parke, Davis & Co., as he found that this fluid extract contains the active principle in practically constant proportions. He does not believe that the increased resistance on the part of the animals used was similar to that which is known to develop to arsenic, morphine, and other alkaloids like cocaine. The serum of animals which have become immune to these drugs does not confer immunity upon other animals when it is injected into them, but in the case of animals that had been rendered immune to *rhus*

toxicodendron he found that their serum possessed distinct antitoxic properties and would neutralize definite multiples of fatal doses in other animals. Thus, in one rabbit two cubic centimeters of serum neutralized two cubic centimeters of rhus toxicodendron; or, in other words, one cubic centimeter of this animal's serum would neutralize five or six times the fatal dose for the animal in question.

The second point, which is of more immediate practical interest, is that this research holds out the possibility of obtaining serum from large animals which could be used in the treatment of severe cases of poisoning by *Rhus Toxicodendron* in human beings.

THE DIAGNOSIS OF TUBERCULAR DISEASE.

Though the discussion of tuberculosis, and particularly its prevention, has become of such wide-spread interest that it forms a part of current literature aside from that which is purely medical, and though the means of preventing the dissemination of the disease are well understood, wisely practiced, and when conscientiously carried out probably entirely efficacious, it must be confessed that in the mind of the profession at large the modern methods of early diagnosis, upon the efficiency and surety of which so much of prophylaxis and even of successful surgical treatment depends, are still regarded as of scientific interest rather than of practical applicability. All physicians probably recognize that a tuberculous family history, recurrent and persisting attacks of pleurisy and bronchitis, the appearance of blood in the sputum, progressive weakness, shortness of breath, and particularly hurried pulse and dyspepsia, are common indices of tuberculosis. Very much the same symptoms may follow from a variety of diseases. This is so often the case that the suspicion of the presence of tuberculosis is not entertained until the disease is so far advanced as to wreck the health and to be accompanied by unmistakable symptoms of local destruction. The diagnosis of pulmonary tuberculosis is greatly

facilitated by examination of the sputum and the finding in it of tubercle bacilli, and the methods have been simplified and refined until they are fairly reliable. Renal tuberculosis may, however, last for months or years and escape diagnosis on the basis of the finding of tubercle bacilli in spite of the most careful search. It therefore becomes of the greatest importance to discover a test which is absolutely conclusive of the presence or absence of tuberculous infection when symptoms suggesting either a purely local or systemic involvement are present.

Calmette's ophthalmic reaction has recently been lauded as one of great reliability. This is elicited by placing one drop of a one-per-cent watery suspension of dry tuberculin in the eye of a tuberculous patient; the conjunctiva becomes red and inflamed and shows all the signs and symptoms of acute mucopurulent catarrh. Clarke and Forsyth (*Liverpool Medico-Chirurgical Journal*, January, 1908) state that the simplicity, the ease, and the safety of the method commend it. The fact that the majority of tuberculous patients respond to it has been proven beyond doubt; also that those in no way tuberculous occasionally give a characteristic reaction.

As to the opsonic index, there seems to be a growing tendency to place a considerable degree of confidence in this test, provided it can be repeated many times and its findings are fairly consonant. The opsonic test implies the presence of a trained opsonist with much leisure time on his hands and an enthusiasm for his work. Either a low or a high index to the tubercle bacillus is regarded as characteristic. The published reports do not justify a belief that the opsonist will become the infallible tubercle diagnostician. It is generally recognized that even though the opsonic index be persistently low this may merely indicate at the most a susceptibility to tubercular infection, and that there may be undoubted tuberculosis with an index normal or nearly so on repeated examinations. Nor, according to Clarke and Forsyth, is the heated serum test of any great value.

It has been asserted that there are two kinds of opsonin in the blood: one destroyed by heat and called thermolabile; the other not destroyed by heat, and called thermostabile; and that the thermostabile is much more abundant in tuberculous patients than in the normal individual. If this were true a valuable diagnostic means would be at hand. Repeated tests show that the thermostabile element in tuberculous serum is usually greater than that found in normal serum, but that it may be completely absent or may be less. Hence a high thermostabile index is not inconsistent with an absence of infection, nor is a low one inconsistent with tuberculous disease in an active state.

From the standpoint of the surgeon the fact that none of the modern laboratory tests are pathognomonic leads him to base his diagnosis and formulate his treatment in accordance with the history, development, and clinical manifestations of the affection under consideration, either totally disregarding the various tests or at most using them as a means of reënforcing his judgment if they develop according to his views, or utterly rejecting their conclusions if they do not accord with the clinical findings. The ophthalmic reaction must be regarded as a distinct gain, since it provides those enthusiasts who are constantly looking to the laboratory for revolutionizing procedures in both diagnosis and treatment with means of satisfying their concepts of scientific treatment at the least possible expense to the patient.

**THE CLINICAL AND PATHOLOGICAL
DIFFERENTIAL DIAGNOSIS OF DIS-
EASES OF THE FEMALE BREAST
IN ITS RELATION TO
TREATMENT.**

It is generally accepted by the profession that the vast majority of tumors of the breast in young women are benign, while those occurring in mature, middle-aged, or old women are malignant; that the exceptions to the first rule are rare, while those to the second are common; that cancer of the breast is a curable affection if recog-

nized early and operated upon properly; that benign tumors are cured by excision; that malignant tumors can be cured only by total excision not only of the breast and overlying skin, but of the underlying muscles and the lymphatic vessels and glands, at least as high as the first rib; that when the clinical diagnosis based on inspection and palpation and glandular involvement is established beyond peradventure, the time for probable successful surgical intervention is usually overpast. It has therefore become a custom in some clinics to immediately excise all breast tumors, subjecting the portion removed to microscopic examination, frozen sections being employed for this purpose, and to proceed further in accordance with the microscopist's findings, the wound either being closed at once, if these are in favor of benignancy, or total excision of the gland, its surrounding tissues and lymphatic connections being practiced in case examination shows that malignant degeneration is present.

It is noteworthy in this relation that Bloodgood (*American Journal of the Medical Sciences*, February, 1908) states that for the last three years he has made "immediate frozen sections of fresh tissue received in the pathological laboratory, but up to the present time a stained frozen section has never been of aid in making the diagnosis when we have been unable to come to a conclusion from the fresh appearance of the tissue, nor up to the present time have I ever depended upon a frozen section to influence the operative procedure, and I have always been governed by the decision made from the study of the fresh appearances at the exploratory incision."

Bloodgood states that tumors of the breast which may appear clinically doubtful can be separated into two great groups. The larger group comprises the solid tumors, the relatively smaller group the cystic. The solid benign tumors are the intracanalicular myxoma, the fibroadenoma, the cystic adenoma, tuberculosis, non-tubercular mastitis, and senile parenchymatous hypertrophy. All solid tumors of the breast may appear either as distinctly encapsu-

lated, circumscribed nodules, or areas of induration. If a tumor, no matter what its character, is buried in the breast tissue, it may give the palpating finger a sense of a non-encapsulated mass. Indeed, it is frequently impossible to make a positive diagnosis of a tumor of the breast in a woman over twenty-five.

The intracanalicular myxoma Bloodgood has observed up to the age of forty-two. It is often multiple and bilateral. It is elastic, lobulated, and encapsulated. In exploratory incision it is recognized by its definite capsule and by the roundish myxomatous lobules which project above the cut surface. These tumors may be quiescent for years and ultimately disappear. Operation is only indicated when they cause much pain or exhibit rapid growth. The tumor itself only requires removal. The single intracanalicular myxoma may grow very rapidly and reach great size, forming cysts in which sarcomatous degeneration is prone to develop. Tumors exhibiting this characteristic of rapid growth should be removed, together with the pectoral muscles, but not necessarily the chain of glands.

Cystic adenoma Bloodgood describes as a rare tumor appearing between the age of twenty-five and thirty-eight years. It is encapsulated with minute cysts projecting from the capsule, 2 to 5 millimeters in diameter, with various-colored contents. Such tumors should be distinguished from the early adenocarcinoma, which, though not encapsulated, has a condensed outer zone with moderate infiltration of the surrounding breast and small cystic cavities within the condensed zone. Tuberculosis begins simply with an area of induration. On clinical examination, without section, this infiltration cannot be distinguished from carcinoma. The section of the mass exhibiting caseation should make the diagnosis clear. Non-tuberculous mastitis unassociated with lactation Bloodgood regards as a very rare lesion, which calls for diagnosis by exploration. He states that it is most important to bear in mind that malignant tumors of the breast may arise

during pregnancy or after lactation is established, and that caking or induration of the breast before the birth of a child in a woman over twenty-five should always be immediately explored, since in his experience it is either tuberculous or carcinomatous. Lactation mastitis with rare exceptions develops before the child is four months old, and should either undergo resolution or suppuration in a few days. If the area of induration persists, and yet shows no evidence of abscess formation, one should be suspicious of tuberculosis or carcinoma, and immediate exploration is indicated.

Chronic lactation mastitis and the formation of a chronic abscess so closely resembles carcinoma that the diagnosis has been made by an exploratory incision, though Bloodgood states that he has twice observed abscess formation in medullary carcinoma.

Carcinoma of the breast is divided into adenocarcinoma, medullary carcinoma, and scirrhus. Of the adenocarcinoma, the comedo adenocarcinoma (duct cancer), beginning as a circumscribed but not encapsulated tumor, shows on section "trabeculae of fibrous tissue in the meshes of which are round granular areas from the center of which worm-like comedo bodies can be expressed." Bloodgood regards the appearance of this tumor as absolutely characteristic, and in his experience of eleven cases none have shown metastases of the axillary glands and all have remained well after operation. This, though it represents the least malignant form of cancer of the breast, calls for the complete operation.

The colloid adenocarcinoma exhibits on incision a thin capsule, and on section "between narrow fibrous trabeculae bulging pink gelatinous lobules" are seen. This tumor is also comparatively benign; Bloodgood believes it is often multicentric and advises the complete operation when it is found.

The adenocarcinoma beginning as circumscribed cystic adenoma is more malignant than either of the two preceding forms and more likely to form metastases. Adeno-

carcinoma beginning in senile parenchymatous hypertrophy, Bloodgood states, generally manifests itself by retraction of the nipple or some involvement of the skin, whilst the exploratory incision reveals "increase of new connective tissue between the little cysts, and the finely granular areas of carcinoma, which can be expressed, will allow a positive diagnosis of cancer." If the surgeon is in doubt Bloodgood advises the complete operation. He considers removal of one or both breasts advisable before the development of carcinomatous stigmata.

Medullary carcinoma in the early stages may simulate a benign growth. On exploratory incision "there is no distinct capsule, and the soft, finely granular, friable tumor should not be mistaken for any other lesion."

In the very early stages scirrhus may simulate other tumors. It is characterized on section "by the star-like mass of fibrous tissue containing in its trabeculae fine granular areas." Bloodgood states that the small scirrhous carcinoma appearing as a circumscribed nodule is often mistaken for benign tumor, and particularly warns surgeons and pathologists not to depend upon rapid frozen sections for the differential diagnosis between these scirrhous carcinomata and adenofibromata, since the old adenofibroma in which the epithelium-lined spaces are undergoing atrophy resembles, in the frozen section, a scirrhus.

As to cystic tumors of the breast, Bloodgood states that a smooth-walled cyst without a papilloma containing blood has, in his experience, invariably been carcinoma; that the simple cyst which may arise in any stage of senile hypertrophy has a distinct wall, smooth inner surface, and non-hemorrhagic, clear, cloudy contents; that a benign cyst with a papilloma has the same wall as the

simple cyst, but projecting from the wall at one point there is a small or large papilloma: the contents of this cyst may be bloody, and there is usually a history of discharge of blood from the nipple. In the malignant papillomatous cyst the distinct wall beneath the base of the papilloma is lost and replaced by solid cancer tissue, and the papilloma has lost its characteristic lobulated surface and usually looks like a soft medullary carcinoma.

The benign dermoid cyst has a distinct, thin cyst wall and the usual granular dermoid material, whilst the malignant dermoid exhibits a thicker wall which cannot be enucleated from the surrounding breast tissue and on section has the granular appearance of cancer, although the contents do not differ from that of a benign cyst.

The importance of Bloodgood's contribution, which represents to an extent a summarizing of his previous truly admirable papers upon this topic, together with the results of further study, will be at once conceded by every active surgeon who, having for his principal aim the radical cure of his patients, still endeavors to attain this end with the least possible mutilation. The ease and safety of the total removal of the breast is such that the surgeon in doubt is tempted to resort to this procedure rather than run the risk of a cancerous recurrence. Doubtless many breasts have been unnecessarily sacrificed. Bloodgood has demonstrated that a careful study of breast tumors will in the majority of instances enable the surgeon from gross appearances to form a just estimate as to the proper surgical procedure. He has further emphasized the fact that often only by an exploratory incision is the differential diagnosis between benign and malignant growths possible at the time when operative intervention is likely to be successful.



REPORTS ON THERAPEUTIC PROGRESS.

ANGINA PECTORIS.

In the *Clinical Journal* of November 6, 1907, RANKIN states that the question of treatment must be considered under two aspects—that which is necessary during the attacks, and that which is called for in the intervals between them. In view of the intensity of the pain and the urgency of the symptoms, the attack demands prompt measures for its relief. The only drugs upon which reliance is to be placed for this purpose are morphine, oxygen, nitrite of amyl, and chloroform. Morphine should be administered hypodermically in a dose of a quarter of a grain, and its efficacy is increased by combining it with one hundredth of a grain of atropine. Morphine not only relieves the pain of the attack, but it also asserts a powerful dilating action on the small vessels by which peripheral resistance is reduced. It should not be used in cases in which there is a threatening of cardiac failure or in which pulmonary edema is present. Under such circumstances ether or caffeine, administered hypodermically, are useful substitutes. But morphine has the advantage of taking a short time to exert its influence. In the first instance, therefore, it is always wise to administer by inhalation five or six drops of nitrite of amyl, the value of which as a vasodilator was first discovered in 1867 by Lauder Brunton. Its action is rapid but fugitive. In a few seconds the face becomes flushed, the eyes injected, and a sense of throbbing is experienced in the head. The effect of the drug does not last more than from thirty seconds to a minute, and in many instances the inhalation must be repeated until the morphine has time to manifest its influence. Sometimes it proves quite powerless, and it is under such circumstances that chloroform finds its opportunity: a few whiffs act promptly and seldom fail to give relief. Similarly, the free inhalation of oxygen is often valuable. The oxygen not only relieves the gasping breathing, but it secures

the circulation through the constricted coronary arteries of superoxygenated blood by which the myocardium is powerfully stimulated. It is convenient to recommend those who are subject to anginal attacks to carry always with them some of the small glass bulbs provided by manufacturing chemists, each containing the proper dose of amyl nitrite for one inhalation. These are easily broken in a handkerchief at the onset of the attack.

Other useful vasodilators are nitroglycerin and nitrite of sodium, but they are less rapid in their action than those already referred to. To some patients nitrite of amyl is an offensive drug, and for them the best substitute for self-administration is nitroglycerin made up in one-minim doses of the one-per-cent solution into small tablets, which may be carried conveniently in the waistcoat pocket. To get the best and speediest effect the tablet should be nibbled and allowed to dissolve in the mouth before swallowing.

In the intervals between the attacks the patient should, as much as possible, avoid physical fatigue and violent emotions. He ought to have long nights in bed, and the ordinary habits of his daily life should be disciplined so as to promote a quiet and uneventful routine. Frequent holidays, during which there is a complete abstention from the duties of ordinary occupation, are desirable. A moderate amount of quiet exercise in the open air is a daily necessity. The diet should be simple and bland; proteids, tea and coffee must be taken in very moderate amount, and all varieties of food that tend to tax the digestive power are best done without. Pure water, or a natural alkaline water, may be drunk with meals, and a tumblerful of piping hot water sipped in the early morning before breakfast promotes the activity of the portal circulation and the excretion of accumulated waste. Milk should enter largely into the daily regimen. Tessier suggests that salt should

be withheld as much as possible. After an attack of angina, Muklen recommends a saltless diet for five days, followed by two days of milk diet before returning to the usual plan of mixed meals.

In order to keep the arterial tension low, mild mercurials should be given periodically: 1 grain of calomel, or two grains of blue pill, combined with 3 grains of rhubarb, may be taken as a matter of routine once a week, and at other times the bowels should be kept gently open by a morning dose of Carlsbad salts. When the tension increases it ought to be controlled by iodide of potassium or sodium in 10-grain doses, combined with one or two minims of the one-per-cent solution of nitroglycerin and three minims of Fowler's solution taken after meals three times a day. This combination may be continued safely over some months or even years, if care is taken to prevent saturation by omitting it for one week out of four. Where the history reveals a gouty element in the case, colchicum may be added to the mixture. In addition to its antigouty value, it accentuates the vasodilating influence of the other drugs. Tonics are sometimes indicated, and of these among the best is a mixture of dilute hydrochloric or phosphoric acid with strychnine in decoction of bark. In cases in which angina is an associate of valvular disease circumstances may arise which call for the exhibition of digitalis. The existence of angina does not contraindicate the use of this drug, but its constrictive influence on the arterioles should be counteracted by combining it with either nitroglycerin or erythrol tetranitrate. It is claimed for the latter drug that its influence is more lasting than that of the other vasodilators. In the false variety of the disease, treatment must be pursued along similar lines so far as the attacks are concerned. When they are severe nitrite of amyl or even morphine may be a necessity, but milder remedies often suffice. Valerian, sumbul, aromatic spirit of ammonia, or chloric ether given at the onset may be effectual, and to any of them nitroglycerin should be added if the pulse indicates a high degree of tension. In

the intervening periods the clue to successful medicinal treatment lies in ascertaining the determining cause of the seizure. This is not always easy to accomplish, but it is obvious that bromides or hydrobromic acid are likely to prove useful in excitable persons of neurotic temperament, iron or arsenic in anemic conditions, and simple alkaline or acid mixtures, according to indication, in those who are the victims of disturbed digestion.

In a large proportion of cases, especially those occurring at or about the climacteric, the following prescription, ordered in capsule form, and to be taken three times a day, will be found useful: Valerianate of zinc, three grains; ichthyol, three grains; arsenous acid, one-fortieth of a grain; and extract of cannabis indica, one-fourth of a grain.

The bowels must be thoroughly evacuated every day, and for this purpose a pill containing half a grain of calomel, quarter of a grain of aloin, and three grains of compound asafetida pill, taken at bedtime, when necessary, will generally prove efficacious.

THE TREATMENT OF LIVER ABSCESS.

CURTIS in the *Clinical Journal* of November 6, 1907, states that operative treatment should always be arranged for at the time exploratory puncture is decided upon, so that the line of successful puncture may be followed up at once, one anesthetic then only being required.

In practice, one punctures where the physical signs have enabled the pus to be located. Redness and edema, with a localized tumor, indicate that the abscess is superficial and pointing, and puncture is directed accordingly.

The seat of the abscess is in the right lobe in 70 to 80 per cent of the cases, in the left lobe in 5 to 15 per cent, in both lobes in 9 per cent, and in the Spigelian lobe in 2 to 5 per cent, the upper and posterior part of the right lobe being the common seat of abscess, which much less frequently occupies the concave surface (Davidson).

If the abscess is evidently pointing, treatment simply consists in following up the exploratory puncture needle, left *in situ*, with a long, narrow-bladed knife, when the abscess cavity is rapidly struck and the pus evacuated. The insertion of a stout, wide-bore tube, sutured to the integuments, completes the operation. The danger of serious hemorrhage is practically *nil*.

If there are no signs of pointing the abscess must be sought, Cheyne says, by exploratory puncture, the trocar and cannula of fairly wide bore being thrust through either the eighth or ninth intercostal space in the anterior axillary line; or failing this, through a point in the nipple line just below the right costal margin. If this also gives a negative result the needle is next thrust through the ninth or tenth right intercostal space, vertically below the angle of the scapula. If pus is found the rib may be exposed and a portion excised. This is not always necessary. On deepening the incision, if the parietal pleura is exposed it is dissected up and the layer over the diaphragm separated, so as to be brought into easy apposition with the parietal layer, to which it is then sutured. When this is done, or if the pleural cavity has not been opened, the diaphragm is incised along the line of the cannula, left *in situ*, Cheyne advising that the liver be pushed well up against the diaphragm, so as to prevent the escape of pus between it and the liver.

A pair of long-bladed dressing or polypus forceps is now inserted by the side of the trocar, and a drain tube inserted along the track thus dilated up. Gauze packing for twenty-four hours may be advisable where the pleural cavity has been laid open.

Manson has devised a very simple method, details of which are to be found in his book on "Tropical Diseases," specially valuable, perhaps, in the case of abscesses deeply situated and difficult to drain.

After puncture with a large trocar and cannula four to five inches long by three-eighths inch in diameter, the trocar is withdrawn. A correspondingly wide-bore

drainage tube, closed at its inner end, but having a wide lateral opening made close by, is stretched taut on a stilette, so as to elongate and narrow its caliber considerably, and in this condition thrust along the cannula to the back of the abscess. The cannula is carefully withdrawn, and then the stilette, leaving the now completely contracted drainage tube *in situ*, the return to its normal caliber entirely preventing any leakage of pus along the track through the diaphragm.

Where it is necessary to open through the abdomen, if the liver is adherent, there is no difficulty in opening the abscess. Where the respiratory movements of the cannula left in place indicate few or no lesions, some operators prefer to insert gauze pads within the peritoneal cavity, with the view of promoting adhesions. Even where no adhesions exist the risk of soiling the peritoneum by the escaping pus does not appear very great, so that preliminary suture of the friable capsule of the liver to the peritoneum has been largely abandoned. It may, however, after inserting temporary pads of gauze, be advisable to evacuate as completely as possible the abscess through a large cannula, before withdrawing it to insert the stout, wide-bore drainage tube. In this way the liver is enabled to fall back into a more normal position with regard to the abdominal wall, so that there is less likelihood of leakage, or of kinking of the tube.

SOME REMARKS ON THE DIAGNOSIS AND TREATMENT OF PERICARDITIS.

SAMUEL WEST, in the *British Medical Journal* of October 26, 1907, refers in respect to treatment to only two special points—the use of opium and paracentesis.

Opium.—The writer cannot understand the objection often felt to the use of opium in heart affections. He has used it largely, and has never seen anything but good follow its judicious administration. In acute pericarditis it is an invaluable remedy, for it allays the irritable, excited action of the

heart in a way no other drug does. No large amount is required. Small doses at frequent intervals, say 5 minims of laudanum or so every four hours, are all that is necessary. Then the patient, who has been restless, distressed, and in pain, becomes quiet and relieved, the pulse-rate drops 20 beats or more, and the action of the heart becomes steadier and more sustained. Many cases of rheumatic heart affections in the acute stage do better with opium than any other drug, and some seem to do no good without it.

Paracentesis is rarely necessary in pericardial effusions of rheumatic origin. They are always serous, and even the largest usually spontaneously disappear. A purulent effusion must be evacuated, but before it can be diagnosed the nature of the effusion must be determined by exploratory puncture. It becomes important, therefore, to consider whether exploratory puncture or paracentesis, if it be decided on, can be most safely done.

It is obvious that the needle should be inserted where the heart is farthest away from the seat of puncture, so as to be out of reach of the needle. There is only one really safe place, and that is between the extreme limit of the cardiac dulness in the axilla and the place where the apex is determined to be. If a hollow needle be carefully inserted here no harm can possibly follow. In any other place the risk of striking the heart is considerable. It is not so much a puncture right through the walls of the heart that is to be feared, for this has often been done with impunity both by accident and intention. The danger lies in the needle scratching the heart, which then rubs a hole in itself, as it were, leading quickly to a tear or rupture, with the escape of blood into the pericardium and immediate death.

It seems that in many books the difference between paracentesis and incision is not clearly drawn. The places advocated are Rotch's notch in the fifth intercostal space near the sternum on the right side, or in the fourth left space near the sternum well within the normal area of cardiac dul-

ness. Both are very dangerous places for puncture.

Rotch's notch, the author confesses, he cannot make out; at any rate, in such a way as to assist in the diagnosis between dilatation of the heart and pericardial effusion, and consequently it seems to him useless as a help in paracentesis.

The only argument in favor of choosing a spot within the normal cardiac dulness for paracentesis is that the pleural cavity need not then be penetrated. But hepatic abscesses are not infrequently opened through the lower ribs behind, and if no regard is had to the pleura in such cases, why must it be treated with so much respect in paracentesis or incision of the pericardium? In some instances unusual cases may have to be selected. The author states that he has himself with impunity punctured in many strange parts, and even drawn blood, showing that he had punctured the heart. But in all ordinary cases the only really safe place is between the apex and the outer limit of the pericardial dulness, and that in spite of the pleura being traversed.

If the effusion be purulent, of course further down procedure will be necessary, but paracentesis must precede incision, for there is no other way of ascertaining the nature of the effusion. In one interesting case in which the author had by means of a fine needle ascertained the presence of pus, he endeavored to pass a larger needle in order to draw it off, but found the needle blunt, so that it would not pass without more force than he cared to exercise. He therefore postponed further proceedings till the next day.

He must have punctured the pericardium, for during the night the pericardium emptied itself into the pleura. This was then tapped, and in a few days the patient was convalescent. In many cases in which the pericardium has been incised the original incision was made into the pleura, either because there was, or was thought to be, a pleural effusion. The pericardial sac was then felt bulging and incised. In one case of this kind the pericardial effusion

developed in the course of pyemia, of which the child died. The author was then enabled to examine the pericardium three days after the incision, and found it universally adherent and perfectly empty of pus. This is an important case, for it shows that purulent pericarditis is more likely than empyema to be cured by paracentesis, though there are many cases of empyema, too, in which paracentesis has sufficed for cure.

When purulent pericarditis has been diagnosed and incision is decided on, it is advised that the seat of incision should be near the sternum on the left side, and that portions of the ribs here should be removed. The excision of ribs here the author considers highly undesirable, for it weakens the chest permanently. He has already shown that after evacuation the pericardium very rapidly closes upon the heart, and that even if pus escape into the pleura it need not affect materially the ultimate prognosis. But, as a matter of fact, it does not follow that the operation must be succeeded by empyema. Therefore the author would on the whole strongly advocate that puncture should be made in the apex region, as he has suggested, and, the pus having been found, that the needle should be used as a director, the knife passed along it, an incision made in this place, when the pericardial sac may be washed out, if necessary, and drained here.

A CASE OF POISONING BY POTASSIUM CHLORATE.

A fatal case of poisoning by potassium chlorate studied in the wards of Professor Klemperer at the Moabit Hospital at Berlin is recorded in the *Allgemeine Medicinische Central-Zeitung* of July 6, 1907, by Dr. Hans Hirschfeld, the changes produced in the blood being given in detail and with special care. The influence of the drug upon the red blood-corpuscles is well known, but in this case some changes were found in the white corpuscles which have not hitherto been observed. The patient was a young woman, aged nineteen years,

who had taken 20 grammes of potassium chlorate on June 4. Two days later she was admitted into hospital showing the typical bluish-gray tinge of the skin with slightly icteric conjunctivæ and passing scanty dark-brown urine containing large quantities of methemoglobin. Venesection was at once performed and a transfusion of defibrinated human blood was carried out, as a result of which the general condition was somewhat improved. In the next few days but very little urine was passed, and edema, vomiting, and signs of cardiac weakness rapidly developed. At the same time, however, the condition of the blood improved, but the bluish-gray coloration of the face gave place to great pallor. The treatment adopted included infusion of salt solution, hot-air baths, pilocarpine injections, and administration of oxygen. The patient died on June 13, having lived nine days after taking the chlorate of potassium.

In regard to the result of the examination made of the blood the most severe changes were observed on the day of admission—i.e., on the third day after the poisoning. A large proportion of the erythrocytes showed a more or less advanced decolorization of the stroma, and the small pigmented bodies containing methemoglobin, first described by Ehrlich, appeared within them. They were observed either singly or in groups in many erythrocytes, sometimes occupying the center of the corpuscle and at other times lying near the periphery. It appeared that they sometimes escaped and were found free in the blood plasma. An enumeration of the erythrocytes at this stage is not of any value owing to the fact that many disintegrated cells are likely to be included. Three days later the number of degenerating red cells was much less, and on the next day they had entirely disappeared. The number of erythrocytes was then found to be 1,500,000 per cubic millimeter, and nucleated red blood-corpuscles were also observed to be present. As regards the leucocytes, when the case was first seen Dr. Hirschfeld counted 30,000 per cubic millimeter, while four days later their number had fallen to 15,000. The

most noticeable increase was found to be in the polymorphonuclear leucocytes, but myelocytes were also seen.

In regard to the changes observed in the structure of the leucocytes as a result of poisoning by chlorate of potassium, only very few observations are on record. Krönig observed a fibrillation of the protoplasm of the lymphocytes, and Jacob stated that a large number of the leucocytes appeared to be swollen. The former of these observations Dr. Hirschfeld was not able to confirm, and the latter he explains as due to pressure in the method of preparation, as he did not find the swollen appearance in fresh specimens. Some of the leucocytes may contain the remains of degenerated erythrocytes. Other cells show variation in their neutrophile granulations, which may be in clumps in some parts, leaving gaps in others. A very noticeable form was also neutrophile cells with several spherical nuclei, a form usually observed in pus, especially that due to gonorrhea. Other cells were seen which were identical with the pseudoleucocytes of Ehrlich and were due to breaking up of the polymorphonuclear cells. Although known to occur in exudates they have only once before been seen in blood, viz., in a case of hemorrhagic smallpox studied by Ehrlich. The interest of this case lies in the great care with which the changes in the blood were observed and in the evidence it affords that potassium chlorate affects the white corpuscles injuriously as well as the red.—*Lancet*, Oct. 26, 1907.

A DANGER IN THE USE OF ATOXYL.

M. H. HALLOPEAU discussed a case of blindness due to the use of atoxyl before the Académie de Médecine (*Bulletin*, July 9, 1907). The patient, whose case had been reported by a foreign colleague, had received 5.10 grammes of atoxyl during twenty-six days. A few days after the last injection she developed visual trouble, resulting after fourteen days in complete amaurosis. The fundus was normal, except for a small focus of choroiditis. M.

Hallopeau admits that the blindness was probably caused by the atoxyl, but he calls attention to the following modifying circumstances: (1) The patient was suffering at the time from alcoholic neuritis, and was, therefore, in a condition of lowered resistance to the toxic action of the medication. (2) The dose was relatively high. The quantity administered during twenty-six days would by the author have been spread over thirty-nine days, during which time a greater elimination of the drug would have taken place. (3) The drug used was of foreign manufacture. M. Duret has shown by chemical experiments that some samples of atoxyl contain free arsenites and arseniates, bodies eminently toxic. The author found no case of visual trouble in 130 cases treated in the St. Louis Hospital, French atoxyl being used; but in 10 cases in which atoxyl of foreign manufacture was administered, two patients suffered from slight and transient ocular disturbance. Other cases of ocular trouble due to atoxyl have been reported. In one case atoxyl had been given continuously for three months. Enormous doses have been given in sleeping sickness, as much as 55 grains in a few weeks. M. Ayres Kopke noted 6 cases of visual affection among 14 (29 Laveran) of these cases, in 3 of which blindness ensued. Result due not to excess of atoxyl, but to its German source (Laveran). Gama Pinto found optic atrophy in these. In one other case there was unilateral hemianopsia. The minimum dose given was 5.50 grammes. (Among cases of sleeping sickness treated with atoxyl in the Pasteur Hospital no ocular accident occurred—Laveran.)

In view of this complication, M. Hallopeau now recommends the postponement of the second series of injections until the arsenic injected in the first series has been completely eliminated, precise indications of which are to be expected from some researches now being carried out by M. Fourneau. As administered by the author, slight symptoms of gastrointestinal intolerance have been observed occasionally, always occurring after the fourth injection.

To be on the safe side, therefore, a pause should be made after the third injection. That this restricted medication is undoubtedly useful is shown by the fact that the author has observed a most notable amelioration after the second injection, and even recalls the disappearance of a papulo-squamous syphilide after only one injection. M. Hallopeau believes also that favorable results have been observed in sleeping sickness after the injection of one dose of 1.50 grammes. He considers, therefore, that the drug should not be pushed till all syphilitic manifestations have disappeared, but that it will nevertheless attenuate the intensity of the disease, giving a heavy blow, as it were, to the treponema. The author gives as his routine prescription, in patients of medium stature, three injections of French atoxyl in decreasing doses—the first 0.75 gramme, two days later 0.60 gramme, and three days after that 0.50 gramme. After waiting ten days he begins a course of mercury lasting sixty days, concluding, if necessary, with a course of iodides. M. Hallopeau considers that the results obtained from the use of this third specific in syphilis justify him in continuing the treatment, and predicts a good career for this anilarsenate of soda, used with necessary precaution—*British Medical Journal*, Dec. 7, 1907.

THE TREATMENT OF MOBILITY OF THE KIDNEYS.

HECTOR MACKENZIE tells us in the *Lancet* of October 26, 1907, that the vast majority of the cases under his care had no symptoms connected with the kidney condition and required no treatment for it. Cases in which the patient suffers from attacks of pain of only occasional occurrence are best treated by rest in the position which the patient instinctively assumes as the most comfortable—namely, on the back or on the side of the affected organ. The local application of heat by hot-water bottles or hot fomentations, or of preparations of belladonna, is useful in relieving severe pain. In cases in which the pain is wear-

ing and persistent, rest in bed should be insisted on for some time. In thin and neurasthenic subjects an attempt should be made to improve their nutrition and general condition. Prolonged rest, good feeding, and general massage sometimes prove very beneficial. The kidney may settle down into its proper situation, and with an increase of the body fat be better supported when the patient gets about again. A pad and bandage will often afford great relief when the patient is up and about, and in the slighter cases the patient need only wear it when she is about to make some unusual exertion. Many of the kidney belts are cumbersome and unsatisfactory and fail to give relief. The appliance which the author has found most efficient is of the nature of a spring truss, and keeps the kidney in position by properly applied pressure of the spring. Some patients are entirely relieved from their symptoms by such an apparatus.

It is interesting to note that of the patients who had symptoms there was not one in this series in whom the symptoms were so severe or serious as to call for surgical treatment. The author recalls very few cases altogether in which he has advised patients to undergo an operation. He is inclined to think that most of the cases which surgeons operate on go to them directly and not through the advice of a physician. When he has a case in which the symptoms are severe and persistent and do not yield to medical treatment, he is glad to seek the help of the surgeon. But he should always advise recourse to other methods of treatment first. While he has no doubt that the results of surgical fixation of the kidney are sometimes most excellent, the operation is not uniformly successful, and is not altogether free from risk to life, one case known to the author undergoing an operation for floating kidney and dying a fortnight after.

The author leaves it to surgeons to describe the methods and indications for operation, but gives a short summary of the results in 131 cases which he has collected from literature. Out of 131 recorded cases operated on by eminent surgeons, nephrorrhaphy or nephropexy was per-

formed 118 times, with a successful issue in 80 cases, but in some of these the time which had elapsed after the operation was too short to enable one to judge of the real result. In 17 cases partial relief only followed, and in 13 the result was failure, and in five of these subsequent nephrectomy was performed with a successful issue. In three cases there was a fatal result. Nephrectomy was performed as the primary operation in 18 cases; 14 were successful; one was a failure; three proved fatal. In these cases which were operated on pain was an almost invariable symptom. Dietl's crises were recorded in two cases; vomiting was recorded in 11; irregular micturition in one; the presence of a tumor was noted in 10; and mental distress on account of the tumor in one. There is one surgeon who seems to have operated in a large proportion of his recorded cases on account of such symptoms as nervousness and dyspepsia.

As it is now eight years since he collected from what was then recent literature the above series of cases operated on, he has consulted the surgical reports of St. Thomas's Hospital for the six years ending December, 1905, and adds that the results of operation appear to be much better in recent years than they were previously. Of 106 cases of nephroptosis admitted to the surgical wards of St. Thomas's Hospital during these years, 80 cases were operated on without a single death. In 73 cases the operation was nephropexy, in three nephropexy was combined with nephrotomy, in one the operation was a lumbar incision and packing with gauze, in one nephropexy was followed by subsequent nephrectomy, and in two nephrectomy alone was performed.

In conclusion, he repeats that movable kidney is undoubtedly a very common condition in the female subject, that in the great majority of cases it produces no symptoms and requires no treatment when local symptoms are absent. When symptoms are present a fair trial should be made of non-operative methods of treatment. Only when there is reason to believe that the kidney is the seat of disease should recourse be had to operation.

THE ART OF GARGLING.

In the course of an article on this subject in the *Medical Record* of December 14, 1907, RICHTER in speaking of infection of the pharynx says that as the territory is freely accessible, local treatment is indicated. The method employed most frequently is gargling, by taking a swallow of pure water or of a mixture, allowing it to run into the posterior part of the mouth, and then, with a slow expiration through the mouth while the soft palate occludes the pharynx, to agitate it so that the bubbling fluid washes the surface.

In gargling after this manner the arches of the palate, together with the uvula, close so far that only the expired air passes through a small opening of the fauces, but none of the gargle itself can flow back into the pharynx. Only the oral cavity is washed.

To reach the pharynx proper and the nose a favorite method with many is the use of the nasal douche. With this, however, usually only the floor of the nose and the median region of the pharynx are rinsed. The laws of hydrostatics will prevent a more extended action of the fluids employed, excepting where the nose is being flushed with the head hanging down backward until the roof of the mouth is parallel to the floor. That is a difficult and disagreeable procedure. Some of the fluid loaded with poisonous secretion may also penetrate the Eustachian tube and infect the internal ear. Besides, the space between epiglottis, root of tongue, and soft palate remains untouched.

The universally used spray exhibits the following drawbacks: Only very mild substances must be used in order to spare the extremely sensitive larynx; there is a danger that toxic substances may be forced from the nose and pharynx into the lungs; the spray will necessarily travel in a straight line following the air current, and only traces of the spray will reach the recesses situated around the shortest route.

The comparative failure of the three procedures finally calls for surgical methods which require much practice and skill and

have created a specialty for the treatment of diseases of the nose and throat.

But not every patient can consult a specialist. The "general practitioner" should be in a position to treat the cases in question before they require special methods, before they become too severe for his resources. Undoubtedly proper care in time would prevent the majority of the cases from reaching a stage where he cannot control them. This he can do by teaching the patient to gargle properly. It is done in the following manner:

The patient (at first under the guidance of the physician) should sit well back in a chair, take a swallow of water in the mouth, and bend the head as far back as possible. In this posture the larynx presses upon the vertebrae and occludes the esophagus. Now he must protrude the tongue from the mouth (the tip of the tongue may be grasped with a handkerchief) and in this posture with protruding tongue he must try to swallow the water. The physician should control the patient's vain efforts—for it is impossible to swallow under such circumstances. He will observe how the water flows back into the pharyngeal space, apparently disappearing entirely. The patient has the sensation as if he actually had swallowed the water. Now he must start to gargle, to exhale air slowly. One can see plainly the bubbling of the fluid in the wide-open pharynx. After gargling thus for a while, the patient is ordered to close the mouth and quickly throw head and body forward. Thereby all the fluid is forced through the choanæ and nostrils, washing the throat and nose from behind and expelling all the accumulations that had been present with great force.

This should be repeated several times, as the first trial is not always successful and satisfactory. It is an art that must be learned. When properly executed the sensation, as the patient will assure you, is that of great relief, not had by any other method. It will be wise for the practitioner to try the method first on himself. Even small children who are at all clever learn the method readily and rather enjoy it.

Medicated gargles used with this method should be of a tepid temperature, but not exactly isotonic with the moisture of the surfaces. The specific gravity of the gargle is entirely irrelevant; with the same specific gravity a gargle may be highly irritating, while a great difference in specific gravity may cause no symptoms whatsoever. Part of the gargle must be expected to remain on the surfaces and exert a more lasting effect. An antisotonic solution will assist greatly toward this end by causing an exchange of substances.

As a rule the aperture of the nostrils is smaller than that of the choanæ, so that the nasal cavity may be compared to a cone the basis of which is formed by the choanæ. This accounts for the welcome force with which gargling after this method is effected.

The method is not by any means a new one, but, as it seems, quite forgotten. Some thirty years ago Professor Hagen, of Leipzig, taught it to his students. It is well worth reviving.

A USEFUL MANOMETRIC TABLE.

BISHOP in the *Medical Record* of December 14, 1907, submits the following brief scale showing the equivalent of the mercury and water columns in ordinary sphygmanometric work:

Mercury.		Water.		Mercury.		Water.
80	=	108		150	=	203
90	=	122		160	=	217
100	=	136		170	=	230
110	=	149		180	=	244
120	=	163		185	=	250
130	=	176		190	=	257
140	=	190		200	=	271

So many are now using blood-pressure apparatus that a question sometimes arises as to the height of a column of water that would correspond to the height of the mercury column. It is not always easy to turn to a scale, as none is given in the ordinary reference books. The meaning of the figures is clear, as, for instance, at the top of the column eighty millimeters of mercury equals one hundred and eight millimeters of water. Further down, two hundred and fifty millimeters of water equals one hundred and eighty-five of mercury.

TREATMENT OF THE ACUTE STAGE OF POLIOMYELITIS.

In the *Long Island Medical Journal* for December, 1907, CLARK gives the following advice. His remarks on the treatment of the acute stage of anterior poliomyelitis are limited to a consideration of this disease in the epidemic form, such as he has just passed through. In many clinical respects the epidemic and sporadic disease are quite different. He first discusses some features of the acute febrile stage:

At the outset the child should have free purgation with calomel or castor oil. The patient should be kept at perfect rest, preferably lying on the side so that the spine will not be the most dependent part of the body; a plank back-rest in the bed will be found a great assistance in securing comfort at rest on the side. If a rapid extension of inflammation in the cord is suspected, the prone position should be adopted. Warmth may be applied over the affected part of the cord by poultices or fomentations. The old remedy of cupping, wet or dry, and the use of leeches may find some theoretical justification. The very marked relief that mustard plasters, poultices, and fomentations give to the pain renders it probable that they exert a beneficial influence in all cases. Inasmuch as the paralytic effects occur relatively late in many cases, one should try to hasten the elimination of the toxins by hot baths and packs, produce diuresis and bowel-cleansing by enteroclysis, and encourage ingestion of large quantities of hot water. The free use of water inside and out the author believes of great benefit.

In such a disease as poliomyelitis, where there is a distinct and natural tendency for the lesion to cease to spread after the first few days and then to lessen in extent, great difficulty is encountered in forming a just opinion of the effects of drugs in the acute phase. Thus, there seems little evidence at hand that such drugs as belladonna and ergot exert any influence in limiting the palsy; however, they may both be used in full doses without doing any actual harm. There can be no doubt that the physical

remedies above mentioned are of much greater value than drugs; it is therefore quite apparent that the nursing care is of prime importance, both to the comfort of the little patient as well as in limiting the spread of the disease in the cord. In the general management of the case two points are of extreme importance—cleanliness and undue pressure to avoid bed-sores. If cotton-wool is not sufficient, a water-bed should be employed. That there may be no urine retention requires constant watchfulness.

All the precautions laid down here should be employed for several days beyond the acute febrile stage, as an apparent recurrence is far from unknown. This reminder is especially true in those cases in which the constitutional symptoms have been prolonged or continue after spinal symptoms occur, or in which the palsy supervenes in successive stages, as in many cases of the present epidemic. Perfect rest should be maintained for two weeks or more. The same prolonged care is necessary when there is neuritis or tenderness of the limbs. It should be remembered that where wasting is taking place some slight tenderness of the muscles and nerve is to be expected to accompany the process; it is purely secondary in nature and does not call for special treatment.

No electrical tests should be employed until all nerve tenderness is absent, and then the isolated faradic shock should be applied to the muscles with the greatest care, as the test is most painful. The extremities should always be so placed that contractions are not forced.

The treatment of the acute stage of poliomyelitis may therefore be summarized in rest, free elimination by the bowels and kidneys, and the best of intelligent nursing care.

ALCOHOL IN RELATION TO MEDICINE.

In the *Scottish Medical and Surgical Journal* for December, 1907, FINLAY tells us that looking at the question from a personal side, he has, as the years pass, come to use alcohol less and less in the treatment

of disease. Pneumonia and enteric fever are among the acute diseases most often met with, in which for limited periods alcohol in small quantity may often be usefully employed; but he has rarely prescribed it in the case of youthful patients, and has generally abstained from ordering it even for adults approaching the middle period of life. He has for long taught that the routine use of alcohol in disease is bad even in acute cases, and that in most chronic cases it is wasted or worse, except when prescribed for some temporary condition, such as sudden heart failure in cardiac disease. The following propositions and recommendations sum up his advice to his readers in dealing with the matter:

1. Regard alcohol as a drug, a very valuable and dangerous one, and put it in the same category as morphine, strychnine, atropine, and the like. If you look upon it as a drug you will probably not go very far wrong.

2. Prescribe it with a due sense of responsibility and not after a routine method, having regard to each case on its own merits, and considering such points as the state of the pulse especially, the age, previous health and habits, and the severity and period of the attack.

3. Young patients of good constitution are better without it, except in presence of heart failure or crisis of some kind.

4. Use the smallest doses possible, and give injunctions as to time and mode of administration. Watch its effects carefully, and omit it when the critical condition has passed.

5. Be especially sparing in chronic diseases, where in most cases it does not the slightest good, but only leads to waste.

In conclusion the author states that he is well aware that what he has advanced will not commend itself to many medical men, both of what may be termed the alcoholic and the non-alcoholic school, whose views, conscientiously held, are entitled to respect; but this he cannot help. He has endeavored to put before his readers the views which he has been led to think correct, not arrived at as a result of physio-

logical study or of observation of the effects of alcohol on the healthy individual, or on the tissues or conduct of the lower animals; but as the result of observation and practical experience in the treatment of disease, aided by a reasonable consideration of the opinions expressed by many observers, and of the evidence upon which these opinions are founded. For obvious reasons the general question of the consumption of alcohol has not entered into his present purpose, but he adds that he believes its daily dietetic use, except in such persons as are weakly, is harmful, and in the young especially so. In them it is bad physically, morally, and intellectually, and his advice would be to have nothing to do with it. That it may be at least not injurious in the case of many who are beyond the meridian of life, taken in wise moderation, the author is not prepared to deny; and in the case of the aged he believes it to be often decidedly beneficial. The great difficulty here is as regards "moderation," and those who cannot assure themselves, or be assured by competent advice upon the point, had better let it alone.

NITRITE POISONING AFTER INTERNAL ADMINISTRATION OF BISMUTH SUBNITRATE.

In 1906 Bennecke and Hoffmann reported a case of sudden death of an infant, after the administration of a bismuth emulsion for radiographic purposes. The bismuth was given in buttermilk, and the death was then ascribed to bismuth poisoning, the drug being dissolved in the lactic acid and thus absorbed. At autopsy a methemoglobinemia was found, which cannot be explained by this theory. A. BÖHME (*Arch. f. exper. Path. u. Pharm.*, 1907, lvii, 441) now reports a similar case. This child was suffering from rachitis, with marked dilatation of the stomach and pronounced digestive disturbances. For radioscopic purposes she was given a bismuth emulsion by mouth (without buttermilk) and later also by rectum. Three hours after the latter administration she was seized with abdominal pains, vomiting and diarrhea, cyanosis, which steadily became more marked, dys-

pnea, collapse symptoms, and death within thirty minutes of the onset. Here also the most evident post-mortem finding was methemoglobinemia. Although bismuth had been found in the liver and blood in the first child, it could not be demonstrated in this case. The clinical and pathological phenomena corresponded so closely with those described in nitrite poisoning that a chemical examination was instituted, the result of which confirmed this view. Both nitric acid and nitrites were found in the blood and other fluids. The nitric acid undoubtedly had its origin from the bismuth preparation, which was administered to the patient. The bismuth, found in the liver in Hoffmann's case, could not have been the cause of the methemoglobinemia and consequent symptoms, for the picture of bismuth poisoning is quite different, resembling in its course that of mercurial poisoning.

The possibility of nitrite poisoning after the administration of bismuth subnitrate induced Böhme to make an experimental investigation of the question. A suspension of bismuth subnitrate in distilled water will give an acid reaction, and the filtrate will show the presence of nitric acid, even after repeated washing of the bismuth salt. In other words, water will cause a hydrolytic splitting of this salt, even though it be insoluble. Likewise, the ready reduction of nitrates to nitrites by means of bacteria is a well-known fact. Böhme found that human feces is capable, at least in the test-tube, of producing nitric acid from bismuth subnitrate. This reaction occurred more readily and frequently with infant stools than with the feces of adults. Experiments with animals showed that in the living organism nitric acid was separated from the bismuth combination, and was absorbed, being excreted later in the urine. In the rabbit no nitrites were excreted, but in the cat a faint nitrite reaction was occasionally obtained. If infant feces was mixed with the bismuth suspension, a pronounced excretion of nitrites could be observed in cats. In rabbits, however, the absorption of nitrites was only observed after a mixture

of infant feces and bismuth subnitrate had been introduced into a closed section of intestine. These differences between cats and rabbits can doubtless be ascribed to variations in the bacterial flora of carnivorous and herbivorous animals.

These experiments show that, under the influence of infant fecal matter upon subnitrate of bismuth, the formation and absorption of nitrites may occur. It is conceivable that the combination of a large quantity of the bismuth salt with a pronounced bacterial activity might produce sufficient amounts of the nitrites to cause a methemoglobinemia. By test-tube experiments Böhme found that 0.0005 gramme potassium nitrite will produce methemoglobinemia in one cubic centimeter of rabbit's blood. The therapeutic doses are probably incapable of producing harm in human beings, even in the very young. The large doses which are required for radiography should be used with some caution even in adults, especially as the conditions favoring nitrite production are not well understood. It has been proposed to substitute bismuth hydroxide for the subnitrate, a step which would exclude the possibility of nitrite poisoning.

THE TUBERCULIN OPHTHALMIC REACTION.

During the present year certain modifications of the original tuberculin for tuberculosis have been introduced. The first of these was that of von Pirquet. This observer read a paper on May 8 before the Berlin Medical Society describing the results of cutaneous inoculation with a 25-per-cent solution of tuberculin. In tuberculous children a typical papule appears within twenty-four hours, while in the non-tuberculous no reaction appears. It was, however, found only to be of use in early life, since practically all adults give the reaction. Eight days later Wolff-Eisler showed that a reaction could be obtained in the conjunctiva with a weak solution of tuberculin, the reaction consisting of a marked conjunctivitis of the eye to which

the tuberculin was applied. Vallee established the diagnostic value of this ocular test upon animals and applied the name of the ophthalmo-reaction to it, by which name it is at present generally known on the continent. Shortly afterward, on June 17, Calmette by reducing the strength of the tuberculin solution found that the reaction obtained was so mild that it might be used for diagnostic purposes in man. Since that time large numbers of observations have been made upon the reaction and its value in diagnosis.

At a recent meeting of the Pathological Section of the Royal Society of Medicine a paper was communicated by Mr. L. J. Austin and Dr. O. F. F. Grünbaum recording their observations on 70 cases. They concluded that the tuberculin ophthalmic reaction promised to be a useful but not infallible means of diagnosis in obscure cases of tuberculosis. At the same meeting Dr. J. E. Squire referred to observations on 120 cases at the Mount Vernon Consumption Hospital, and Mr. Sydney Stephenson to more than fifty trials of the test, both observers expressing favorable opinions as to its value, but mentioning that under certain conditions a severe reaction might occur. Dr. Squire had noticed an especially severe reaction on a second trial of the test in one case, and he suggested that it might be found necessary to readjust the dosage. In the *Berliner klinische Wochenschrift* of November 25 Dr. Sigismund Cohn, of Berlin, records his observations upon 310 cases. He concludes that a positive ophthalmic reaction renders a diagnosis of tuberculous disease highly probable, but that a negative reaction does not exclude that disease, since 50 per cent of severe cases of pulmonary tuberculosis fail to react. On the other hand, early and mild cases of that form of tuberculosis only rarely give negative results. Dr. Cohn finds that a considerable proportion of cases of typhoid fever give a positive reaction, especially in the non-febrile stage and in convalescence. He obtained a reaction in eight out of twelve cases. It is, however, interesting to note that Mr. Austin and Dr. Grünbaum observed

no reaction, especially in the non-febrile stage and in convalescence. Dr. Cohn further finds that a subcutaneous injection of tuberculin in the usual manner two or three weeks subsequently to an ophthalmic test often includes the conjunctival redness and injection to reappear.

An interesting paper by M. J. Comby, of Paris, is published in *Le Bulletin Médical* of November 20, 1907, describing the results of 300 observations upon the test in children. In his earlier trials M. Comby employed the test as described by Calmette, viz., by precipitating tuberculin with 95-per-cent alcohol, drying the precipitate, and dissolving it in sterilized water to form a one-per-cent solution. No form of glycerinated tuberculin must be used. He found that the reaction, which ordinarily appears in from six to ten hours, might be delayed until twenty-four, or even, in exceptional cases, to thirty-six or forty-eight hours. The reaction usually appeared in the region of the semilunar fold and caruncle and might be very slight, or in some cases more intense, with general redness and swelling of the conjunctiva and some seropurulent secretion, lasting in some cases as long as eight or ten days. The occurrence of so severe a reaction, even though rare (M. Comby observed it only twice), is calculated to bring the reaction into discredit. Accordingly M. Comby reduced the strength of the solution to 1 in 200. He states that his experience of the test with this weakened solution is entirely favorable and he recommends it without any reservation. Even with this, however, he has once observed an intense reaction. He states that on no occasion was any general reaction obtained from the ophthalmic application of tuberculin. The reaction may be repeated, and the test does not appear to lose any of its value; in non-tuberculous cases the result is uniformly negative, while in tuberculous cases the reaction develops after each application. M. Comby regards the ophthalmic reaction as of great practical value in the diagnosis of obscure cases of tuberculous disease in children and anticipates that it will enable effective treatment

to be started at an earlier period than has been possible hitherto.

The reaction, although of so recent introduction, has received a great deal of attention, and the usual enthusiasm for novelties has been amply exemplified. Scarcely a discordant note is to be found in the pæan of praise, though Kalt, indeed, has recorded some exacerbation of ocular disease in cases in which the test has been applied. The majority of observers agree that it is harmless, that the discomfort produced is trifling, that the patient's general state is unaffected, and that the reaction occurs in every form of tuberculosis unless the patient is moribund or nearly so. The era of adverse criticism has not yet set in, though it is as certain to follow as night to succeed day. Only then shall we be in a position to gauge accurately the specific value of the new procedure. In the meantime it scarcely requires mention that a positive reaction merely demonstrates the presence of some tuberculous lesion in the individual, probably a lesion long latent; it does not follow that any particular disease under immediate observation is necessarily tuberculous. That the test is devoid of danger further investigation can alone decide. The disastrous experiences of the past rapidly fade into oblivion unless they are deliberately recalled to serve as a wholesome corrective; we may instance Koch's tuberculin as a case in point. The tuberculin ophthalmic reaction is still in the experimental stage. We should like to see some further investigation of carefully selected cases, specially designed to determine whether the reaction is as innocuous as has been assumed.—*Lancet*, Dec. 7, 1907.

PERMANENT RECTAL INFUSION IN DIFFUSE PERITONITIS.

Diffuse peritonitis is a disease whose outcome cannot be prognosticated with certainty. As regards its treatment, all are agreed as to how to relieve some symptoms and maintain the strength of the patient, but treatment on these lines is of no value in overcoming the inflammation of the peritoneum. The progress of abdominal sur-

gery and the results obtained by the operative treatment of circumscribed peritonitis have led surgeons to hope that diffuse peritonitis might also be treated surgically. The surgical treatment removes purulent exudate, affords easy escape for future secretion, the patient thus being spared the resorption of much infectious material, and permits suturing or removal of the affected organ from which the peritonitis spread, but it does not affect any general infection which has already taken place at the time of operation. With the idea of influencing the latter, Murphy, Michaux, Lenhartz, and others have advised rectal infusions of physiological salt solution. These have the further advantage of allaying thirst, increasing the blood-pressure, stimulating the heart, causing diuresis, and permitting the ingestion of nourishment. The infusions are easily given. An ordinary irrigator is suspended about half a yard above the level of the patient, and the flow from the irrigator is so regulated by an artery clamp attached to the tube that only two drachms per second flow from the irrigator through an ordinary rectal tube inserted into the anus. The patient thus absorbs two quarts in several hours, when the infusion is stopped, but it is repeated after ten hours. In order to keep the fluid warm, hot-water bags are hung on either side of the irrigator. After several such infusions have been given the feces become softened and peristalsis is brought about; a colon irrigation will then usually clean out the bowels, after which a dose of opium may be given to quiet the intestine.

These infusions have been used at Mt. Sinai Hospital in New York for the past year with good result, and also in Germany. In the October number of *Die Therapie der Gegenwart*, R. Kothe reports the results obtained in Sonnenberg's clinic in Berlin. Grape-sugar and albuminous preparations are frequently added to the salt solution as used in Berlin. Out of twelve patients, eight recovered, some of the latter having been considered hopeless. At Sonnenberg's clinic the infusions are now given in all cases of diffuse peritonitis, whether a lapa-

rotomy was performed or not, and as a prophylactic measure in cases of extensive intestinal resections and pyosalpinx operations in which a strict asepsis cannot always be maintained.—*Medical Record*, Dec. 14, 1907.

OBSERVATIONS ON THE OPHTHALMO-REACTION TO TUBERCULIN.

MACLENNAN in the *British Medical Journal* of December 7, 1907, reminds us that the early diagnosis of tuberculous affections is often attended with the greatest difficulty. More especially is this the case when we have to deal with obscure lesions other than in the lungs—for example, in the abdomen and nervous system. We are often very suspicious that certain chronic conditions, associated with debility and emaciation, but without localizing or diagnostic symptoms, may be of tuberculous origin. In such cases we would welcome a simple test that would enable us to make an earlier and more certain diagnosis. In the "ophthalmo-reaction" to tuberculin we have probably just such an agent.

The oculo-reaction to tuberculin was, as is now well known, introduced last summer by Calmette, of the Pasteur Institute of Lille, as a diagnostic test for the presence of tuberculosis. That able worker in the field of tuberculosis claimed for it certain advantages over other tests hitherto in vogue. These may thus be summarized: (1) It is absolutely safe; (2) it is so easy of application that any one can carry it out; (3) it produces no constitutional disturbance and locally usually nothing more than a slight ocular discomfort and lacrimation; (4) it is as accurate and delicate as the hypodermic injection, if not more so.

The technique, as described by Calmette, consists in instilling one drop of a one-per-cent solution of his tuberculin into the inner half of the conjunctiva.

With a view to ascertaining the accuracy of Calmette's claims, the author has made over 100 observations, 70 with the Calmette tuberculin, 25 with the "old," and 10 with the "new" tuberculin. In from three to ten hours, sometimes rather sooner and not in-

frequently rather later, the positive reaction manifests itself. This consists at first of a slight injection of the conjunctiva near the caruncle, with a little lacrimation. From first to last in the "slightest reactions" that is all that may be seen. In these light reactions the congestion is confined to the inner part of the conjunctiva, and unless it is looked for carefully it may be missed. It is, however, a quite characteristic redness, and can easily be recognized by comparing it with the normal untreated eye. The amount of reaction is most variable, and, so far as the experience of the author is concerned, it does not bear a demonstrable relation to the severity of the lesion from a clinical point of view. Some of the most pronounced reactions observed by him were in cases in which there were no physical signs or clinical evidence of the presence of the tubercle. We may get all degrees of inflammation, from the smallest amount of local conjunctival injection to redness extending over the entire eye, and having all the appearance of acute conjunctivitis. There is occasionally some purulent discharge, and much photophobia and swelling of the caruncle. None of these reactions, even the most severe, have given rise to any trouble, and almost all have, in a period of from two to ten days, completely cleared up. This occasional overviolent reaction is the only drawback to the test that the author has observed. Perhaps it may be eliminated by giving always in the first instance a weaker solution, say a 1 in 200, as a preliminary test. Indeed, Comby seems to have found that this strength of solution was, in a large series of tests applied to children, as reliable as the stronger solution, and that in no instance did it produce any excessive reaction. The author's own experience tends to confirm this view, as will be seen by a reference to the summary of cases. It should be mentioned, however, that Oliver and Terras, who tried a solution of Calmette's tuberculin, 1 in 150, obtained in adults only doubtful results.

The applicability and the delicacy of this test depends on the integrity of the eyes. Any ocular lesion, according to Comby,

whether it be acute or chronic, contraindicates its employment. In the cases under the care of the author only eyes that were perfectly healthy were subjected to the test. Brunetiere thinks the test may be applied if one eye be intact by dropping the solution of tuberculin into the sound eye. But as the reaction, especially when slight, is only appreciated by comparison with the sound eye, it is obvious that the delicacy of the test must be seriously impaired unless both eyes be perfectly free from inflammation. But it is possible, as Sydney Stephenson points out in a recent article in the *British Medical Journal*, that the test may be employed in certain eye diseases suspected to be of tuberculous origin. The reaction which follows may not only be diagnostic, but the author suggests that it may be of some therapeutic value to the local condition.

The analysis of his cases brings out these facts: (1) That for the most part the claims advanced by Calmette for his test are fully justified; (2) that the test apparently reveals the presence of tuberculous lesions that are quite benign and unsuspected from a clinical point of view, as well as those that are more obvious; (3) that in those cases in which a subcutaneous injection of "old" tuberculin has given a positive or negative reaction the same result has followed the application of the ophthalmic test; (4) there seems some evidence that a solution of the "old" tuberculin may answer equally well.

The results of MacLennan's observations may be thus summarized:

1. *Calmette's Tuberculin*.—The dried preparation, dissolved in distilled water 1 in 100, was employed in 37 cases of disease with well-marked evidence of tubercle, or that were clinically suspected to be tuberculous. These may be thus classified:

(a) Twenty-five cases, all known to be tuberculous. With two exceptions all of these reacted positively in from two and a half to ten hours. One of the two negative results was in a child with lupus, who cried when the solution was instilled; the other was a case of scrofuloderma with an

extensive and extending lesion. In this latter case the test was applied to each eye with a negative result. In the majority of these tuberculous cases the reaction began in about three hours, and was usually at its height in about ten hours. Occasionally it was delayed till the second day. In about a quarter of them the reaction was severe, associated with considerable lachrimation and some exudation, and the conjunctivitis in some instances lasted for a week or ten days. As had been already noticed by some observers, the author found that there was, in a few cases, a recrudescence of a disappearing oculo-reaction when a hypodermic injection of tuberculin was given.

(b) Cases suspected. Twelve of these were subjected to the test. It was negative three times—for example, pyelitis, synovitis, and tuberculous hip (quiescent for two years); and positive in the following: Delayed resolution in pneumonia, fistula, chronic diarrhea, chronic bone disease, chronic cough without physical signs, fractured femur with tuberculous family history, diabetes with prolonged expiration at apex, asthma and pleurisy, and sacral abscess.

2. Twenty cases clinically tuberculous tested with a 1-in-200 solution of Calmette's tuberculin. The reaction was positive in all except one case of multiple sacral abscess. This case was demonstrated to be tuberculous at a later period, as the discharge inoculated into rabbits produced typical tuberculous lesions. Twelve of these cases had previously given a positive reaction to the stronger solution (1 in 100), but the reaction to the weaker solution was equally characteristic, and in no case was it too severe.

3. Twenty cases, apparently free from tuberculous lesion, were subjected to the Calmette test (1 in 100). Of these cases, four gave a positive reaction, the remainder being negative.

4. Twenty-five cases were subjected to the test with a 1 in 100 of the "old" tuberculin of Koch. Of 14 clinically tuberculous, 12 reacted positively and 2 negatively; the remainder, which gave a negative result,

showed no signs of tubercle. Ten of the positive cases had given previously the same reaction to the 1-in-100 solution of Calmette.

5. Ten cases treated with 1-in-100 solution of the "new" tuberculin gave doubtful or negative results, quite unlike that produced by the Calmette solution or the "old" tuberculin solution.

To ascertain if the reaction was alone produced by the preparation of Calmette, the author also tried a 1-in-100 solution in distilled water of the old tuberculin of Koch on many of the same cases that had been previously tested by the Calmette preparation. This was done long after every trace of the reaction produced by the Calmette solution had disappeared, and on the eye hitherto untreated. In most of these cases the results were identical. But a solution of the "new" tuberculin of a similar strength gave the author either negative or very doubtful results. In some of those cases distinctly tuberculous there was with it a minute amount of redness, but not a characteristic reaction. According to Calmette, the presence of glycerin or carbolic acid in the "new" or "old" tuberculin vitiates the test by their irritating actions. MacLennan does not believe that this is correct, for if it be considered that in the solutions he used of these preparations carbolic acid or glycerin could not have been present in more than $\frac{1}{2}$ to 1 per cent, this action may be discounted. To decide the matter, however, he has instilled into many healthy eyes one-per-cent solutions of phenol and glycerin, without evoking the slightest redness, lacrimation, or swelling of the caruncle.

This test shows that while the great majority of cases obviously tuberculous give a positive reaction, a smaller proportion, undoubtedly tuberculous in character, fail to give any result. Mantoux has tried the test in 200 apparently healthy children, and it was only positive in eight per cent. This writer points out, with reason, that latent tuberculous affections must be more frequent than this figure would seem to indicate. In dealing with children, however, the validity of the test depends on the ab-

sence of fear. If the child is afraid, and cries, the tuberculin is washed out of the eyes and no result follows. While, therefore, the ophthalmo-reaction is a valuable contribution to our means of diagnosing tuberculosis, on account of its simplicity and freedom from constitutional disturbance, it must not be interpreted, either when negative or positive, as conclusive of the absence or presence of the disease. It is, however, quite as reliable as the hypodermic injection, and MacLennan's cases support this view, which is also held by Sicard and Descomps. These two writers, indeed, believe it to be more certain than the hypodermic injection or the other new test, the cuto-reaction; while Prouff, Gasset, and Rimbaud are also favorable to it.

Probably the hypodermic injection of tuberculin will often give reactions which would fail to be elicited by the ophthalmic test, because it is almost certain that hitherto the doses of tuberculin administered have been much too large. Such doses are always toxic and are likely to be followed by reactions in the tuberculous and non-tuberculous alike, though, of course, the latter are not so susceptible. The subcutaneous injection of tuberculin—either the "old" or the "new" preparation of Koch—if repeated frequently enough and in graduated doses, with careful observation of the temperatures and local reactions, is a trustworthy negative and positive test. The very "slight reactions" are not infrequently overlooked, and the accuracy of the test is thus impugned. But the application of the test is troublesome, and there are several well-known risks associated with its employment. The constitutional disturbance is often very severe, and formerly, before its dose was properly adjusted, it often did a great deal of harm. Besides, the method is painful for children and often very distasteful to adults. In many instances permission to carry it out is absolutely refused. Hence the value of the ophthalmo-reaction, which promises to be accurate, while free from the disadvantages of the subcutaneous method.

The comparative delicacy of the test may be gauged from the results published by

Letulle, who in 75 tuberculous cases tested got a positive ophthalmo-reaction in all except three; two of these three were moribund, while the third recovered. These results are interesting. If, during a chronic tuberculosis, any antitoxin is, as one would expect it to be, developed, then the failure of the reaction in the two of Letulle's cases may have been due to an immunity imparted to the tissue, or else to the fact that vitality was too low to give any inflammatory reaction.

It is clear that if this test proves, on further experience, to be reliable, it will be a valuable aid to the early diagnosis of tuberculosis in obscure cases, and more especially in dealing with children. The success of modern methods depends on the early diagnosis of phthisis and other tuberculous affections. When a lesion is presenting clinically well-marked physical signs and symptoms, and its tuberculous nature has frankly declared itself, it is often too late to intervene with any prospect of success.

Undoubtedly a far larger proportion of the apparently healthy than we imagine are the victims of latent tuberculous affections. The observations made in the post-mortem room, or when the abdomen is opened for surgical purposes, amply bear this out, and the frequent evidence we have of bygone and completely-healed tuberculous lesions demonstrates that tuberculosis is an eminently curable disease. Any test that can help us to make our diagnosis earlier, and so to institute treatment at a stage when it would be effective, would be of the greatest importance to the physician and the public. Probably if this disease is to be stamped out, our best chance of exterminating it is to recognize it in the young and in its pre-clinical stage. If segregation of the tuberculous ever becomes a practical question, might not schoolchildren who exhibited suspicious symptoms and who gave a positive ophthalmo-reaction be segregated and kept under observation?

Some rather interesting points suggest themselves from a study of MacLennan's results. In a few cases not suspected to be tuberculous, but whose family history was

bad, he has obtained pronounced reactions. Is it possible that this reaction not only reveals the presence of an actual lesion, but also a condition of tissue which is susceptible to the development of tuberculosis? What is the meaning of this reaction? Clearly to the conjunctiva of the tuberculous it is an irritant. To the eye of the healthy it is bland. The author has been rather surprised to get a positive reaction in some cases of lupus that had been treated by the subcutaneous injections of the "old" tuberculin, from the smallest to the largest doses, till all local and general reactions had ceased. In such cases one would have expected that the tissues would have acquired an immunity to tuberculin. Are we to assume from this test, when positive, that there is always present an actual tuberculous lesion, or may we get it in the absence of a lesion in those susceptible to the disease? This point can only be settled by prolonged observation and by following the future history of those cases in which the ophthalmo-reaction has been positive. Parallel results are obtained by the cuto-reaction of von Pirquet. Here, again, the introduction of tuberculin into the skin causes in the tuberculous a characteristic lesion. The tuberculin proves itself an irritant to the skin in the same way as to the conjunctiva. Both in the case of the eye and the skin the action is an evidence of tissue resistance to tuberculin in the tuberculous. Is the tuberculin elaborated in the living tissue the same as that manufactured *in vitro*? One would expect that tuberculin instilled into the eye, scratched into the skin, or injected hypodermically, would "react" only in the healthy, for is not the reaction a sign of tissue resistance that we would expect to find better developed in the healthy than in the unhealthy? It seems apparent that tuberculin, or some other toxin developed in the tuberculous, imparts to the tissues a resistance to tuberculin, as expressed by the inflammation in the eye or skin, that is absent in the healthy. Von Pirquet holds that the reaction is due to the presence of an antibody.

THE TREATMENT OF DYSENTERY.

SANDWITH in the *Lancet* of December 7, 1907, states that the treatment of the acute form of dysentery in general respects is exactly the same whether the patient is suffering from the bacillary or the amebic variety. Rest in bed is the first essential, with warm clothing, perhaps a hot-water bottle, and certainly a pad of cotton-wool on the abdomen surrounded by a flannel bandage. Physiological rest for the intestines, so far as possible, must be obtained by stopping all solid food and giving only small quantities of liquid every two or three hours. When the tongue is fairly clean boiled or sterilized milk, pure or diluted with rice water, or peptonized, is the best food. The daily examination of stools, as in enteric fever, will tell whether we are giving too much milk or whether it is necessary to peptonize it. When the tongue is thickly coated, or the patient loathes milk, we may have to give chicken broth, albumin-water, whey, or rice-water for a day or two. Alcohol will not help the dysentery and is bad for the liver, so should be withheld unless the heart requires it; brandy in such circumstances is the best stimulant. All food should be given tepid, neither hot nor cold, and even then a small injudicious meal may cause immediate peristalsis and an action of the bowels.

The author purposely dwells upon these details because he wants to impress upon his readers that dysentery must be treated just as carefully as enteric fever if the patient is to be cured. The first drug to be given is something to clean out the bowel, and it is surprising how much feces may be retained even when a man is passing as many as thirty motions in the twenty-four hours. It is always safe to assume that the patient, until he comes under our care, has been taking an improper diet. Castor oil in one dose may be given, or drachm doses of sulphate of magnesium, or one-sixth of a grain of calomel every hour until a fecal result is produced, which will usually be after four or five doses. The patient is allowed to drink simple acid lemonade or a solution of lactic acid (1 in 3000) to re-

lieve thirst. Small enemata of saline solution will diminish tenesmus, and this most troublesome symptom can also be checked by suppositories of cocaine, opium, or belladonna. When there is much hemorrhage from the bowels an ice-bag is placed over the abdomen, opium is given internally, and enemata of iced water. It is hardly necessary to say that the bedpan must invariably be employed whether hemorrhage exists or not. Quinine must be given if there is any suspicion of malaria coexisting with the dysentery. For collapse the subcutaneous injection of normal saline solution is useful. Ipecacuanha and large enemata of silver nitrate or other salts are not useful here, though nitrate of silver enemata (1 to 1000) can be used in chronic cases.

Shiga was the first to use serum treatment, which is bactericidal as well as antitoxic. An agar culture of the dysentery bacillus which has been maintained at incubator temperature for twenty-four hours is emulsified in normal saline solution and heated at 60° C. for half an hour. The mixture is then inoculated subcutaneously into horses beginning with small doses, gradually increased in amount. The following rules have been found to work well in Japan: (1) In mild cases the serum is injected into a patient in one dose of 10 cubic centimeters; (2) in cases of average severity the serum is injected a second time after an interval of from six to ten hours; and (3) in severe cases this dose must be repeated twice daily for two or three days.

By serum treatment an early case (second or third day) can be cured or greatly improved, the blood and mucus disappear, the pain and tenesmus cease, and the patient gets refreshing sleep. In later cases improvement is also seen, but not so rapidly. By medical treatment alone patients recover in forty days or die on the eleventh day; by the serum treatment they recover in twenty-five days or death is postponed till the sixteenth day. A polyvalent serum powerful against all types of dysenteric bacilli is more likely to be useful, because each immune serum is most active against its

own type of bacillus. Preventive inoculation by the simultaneous method in which the dead bacillus emulsion (heated at 60° C. for thirty minutes) and specific immune serum are simultaneously injected has been found very useful, for Shiga reports that he tried this method in one district of Japan where epidemic dysentery prevailed extensively, and he was able to diminish the mortality in the district from 20 to 30 per cent to about zero. Professor Rosculet, of Roumania, also reports a successful experiment for the prevention of dysentery by serum. He injected five cubic centimeters of serum into 18 people living in houses in which there were dysentery patients; 18 others exposed to similar conditions were not injected, and were watched as controls. No single person of the 18 injected became ill, while of the control cases 14 succumbed to typical dysentery.

The following method has recently been employed in India for the treatment of bacillary dysentery: First prepare a vaccine from a bacillus similar to that affecting the patient, whether Shiga or Flexner. Standardize it on rabbits and use it to inoculate the patient. Watch the opsonic index, or, if that is impossible, repeat the inoculation at intervals of from ten to fourteen days, being guided by the condition of the patient. This method is found best in the chronic form of the disease and is no use in acute cases, because they are too fulminating. The inoculation should be made hypodermically, and the most convenient site, as in antityphoid and other bacterial vaccines, is in the front of the chest about three inches below the clavicle. The inoculation should not be intramuscular, because then the local reaction is more painful and it takes longer for absorption to occur.

THE MAKING OF A SHELF BELOW THE UNDULY MOBILE KIDNEY.

THOMSON (*Edinburgh Medical Journal*, October, 1907) announces himself as a convert to the Harris method of limiting the range of movable kidney. Thomson states that if the lower ribs are removed so as to display the diaphragm, a thick layer of

fascia—the transversalis fascia—is seen to descend from the under surface of this muscle, and to split into two layers, so as to enclose the suprarenal capsule, the kidney, and the perirenal fat, the space between the two layers being known as Gerota's space. The anterior layer passes in front of the kidney in very close contact with the parietal peritoneum, except where the ureter runs down between them; it ultimately becomes lost in the peritoneum, or may be traced into the corresponding layer of the opposite side. The posterior layer passes behind the kidney and ureter and over the quadratus lumborum and psoas muscles. These two layers, which are described as the anterior and posterior layers of the perirenal fascia, do not fuse with one another on the inner and lower aspects of the kidney, while they do so above and to the outer side.

In cutting down upon the kidney, it is necessary to divide one of these layers of fascia in order to expose the organ; in cutting down from the loin the posterior layer must be divided, while in cutting down from the front by the transperitoneal route, it is the anterior layer which is divided.

It is obvious from the description of this fascia that when there is any factor tending to move the kidney unduly there is little or no hindrance to movement in the downward and inward direction, and as the range of movement increases the parietal peritoneum and the anterior layer of the perirenal fascia are pushed forward until a larger and larger space is formed in which the kidney is free to move about. This space is analogous to the sac of a hernia, and the operation by which it is intended to close the space below may be regarded as analogous to the obliteration of the neck of the sac in the operative cure of hernia.

The suprarenal capsule on either side has a definite and assured position on the posterior abdominal wall, and its attachments are so firm that they would easily support the kidney if the two organs were firmly enough fixed to one another. While this is

the case in childhood, it is not so in adult life. As development goes on the suprarenal becomes relatively smaller, and its attachment to the kidney becomes much looser, so that it is no longer able to support the kidney. In the adult the perirenal fat insinuates itself between the kidney and the suprarenal capsule, and the connections between the two are so attenuated that independent movement of the kidney becomes possible.

With regard to the influence of external violence, such as a fall or blow in the region of the kidney, most of the cases recorded as due to such injury will not stand criticism; the relaxation or pouching of the parietal peritoneum, which is always associated with movable kidney, cannot any more than a large hernial sac be produced by violence. It is obvious that a kidney which is already movable but has not given rise to symptoms, may do so after an injury or after violent exertion.

Apart from the presence of the liver, the chief anatomical difference on the two sides is to be found in the position and attachments of the colon. In the case of the left kidney the flexure of the colon is usually at the level of its upper pole, and the flexure is fixed to the parietes by the strong phrenicolic ligament; the descending colon, which is devoid of a mesentery, follows the outer border of the kidney. On the right side the ascending colon only reaches to a little above the lower pole of the kidney, and the hepatic flexure has no strong attachment to the parietes.

This difference in the position and attachments of the colon and in its peritoneal relationships appears to afford the most reasonable explanation of the predominance of renal displacement on the right side.

In practicing the Harris method Thomson states that the incision commences at the tip of the twelfth rib, and is continued downward and forward in the line of the external oblique muscle; the fibers of the three layers of abdominal muscles are then separated in the gridiron fashion suggested by McBurney, and the transversalis fascia, or, to speak more accurately, the posterior

layer of the perirenal fascia, is divided, and the space—Gerota's space—in which the kidney lies is opened up. The condition of the organ is investigated, and its range of movement observed, attention being directed to the size of the space in which it lies and the extent to which the anterior layer of perirenal fascia and the parietal peritoneum has been lifted. The perirenal fat, if there be any, should be removed from about the lower pole of the organ so as to permit of the close approximation and union of the fascial structures. The layers which are to be brought together so as to obliterate the lower end of Gerota's space are the parietal peritoneum and anterior layer of the perirenal fascia in front, and the posterior layer of the perirenal fascia and the aponeurosis of origin of the internal oblique and transversalis muscles behind. The parts being held aside by suitable retractors, the stitching is commenced at the deepest part of the wound—interrupted sutures of chromic gut being used—and is continued bit by bit toward the surface until a complete shelf has been formed. Should the space in which the kidney moves be very large, and the parietal peritoneum be lifted up to the inner side of the ascending colon, the peritoneum should be divided in a vertical direction immediately to the outer side of the colon, and the deepest-lying sutures are then passed through the peritoneum from within, thus avoiding injury to the bowel or to the vessels distributed to it, and at the same time approximating the parietal peritoneum, both inside and outside the colon, to the posterior abdominal wall. Care should be taken not to include the last dorsal and first lumbar nerves within the grasp of the sutures. The layers of muscle are then approximated, and the wound in the integuments is closed without drainage.

Although in some cases the kidney may be found to occupy a lower position than normal, its capacity for undue movement is completely arrested, although it is still capable of moving slightly up and down, as a normal kidney should during respiration.

The principle of the operation is more efficiently and satisfactorily carried out if the peritoneum is opened outside the line of the colon, and the writer is inclined to adopt this as a routine practice.

Compared with the pain and discomfort, and in many cases the prolonged sickness and vomiting, which follow upon a nephropexy, the patient after the operation above described is as a rule no more disturbed than after a herniotomy.

A STATISTICAL STUDY OF THE RELATION BETWEEN THE HEIGHT OF THE LONGITUDINAL ARCH AND THE FUNCTIONS OF THE FOOT.

HOFFMANN (*Interstate Medical Journal*, August, 1907) in examining the feet of primitive peoples at the St. Louis World's Fair had suggested to him by the great variety of impression records obtained from feet that were functionally normal a statistical study of the question of the relation between the height of the longitudinal arch and the usefulness of the foot. The records forming the basis of his statistics were made by the method of weight-bearing on smoked paper. They do not show the height of the longitudinal arch, but show the breadth of the arch and how much of the sole comes in contact with the ground on weight-bearing.

In all he took impressions from 186 individuals who had never worn footwear, nor in a single instance did he find any sign of weakness, so common in shoe-wearing feet. All had strong, flexible feet. In a further study of 560 feet that presented more or less typical symptoms of strain or weakness of the longitudinal arch, he notes that gross change in the height of the arch is not as frequent an accompaniment of weakness as is commonly taught—in fact, that the average character of the imprints of feet with weakened arches does not differ much from the average character of those of symptomless feet. He found that the American and primitive negroes presented a smaller percentage of low and a higher percentage of high arches than did the Caucasians, thus contradicting a com-

monly accepted view. Moreover, 560 Caucasian feet with symptoms of weakened arches did not present a much larger percentage of low arches than did the normal or symptomless Caucasian feet.

From his statistics Hoffmann draws the following conclusions:

That there is no one type of arch as the normal.

That, contrary to common opinion and teaching, the height and shape of the longitudinal arch are of no value in estimating the strength or usefulness of the foot.

That normal feet present high, medium, and low arches in nearly the same proportions as do feet with weakened arches.

That weakness of the longitudinal arch rarely results in its depression, and that flatfoot as a pathological entity is not common.

That the impression records of the longitudinal arch, commonly made by surgeons, are of no value in the diagnosis of arch strain or the so-called flatfoot, whose symptoms are dependent upon a weakened arch, and not upon its lowness, except in so far as this lowness is a transition from an original higher condition with concomitant change in the relationship of the tarsal bones, which transition occurs less often than is generally believed.

A TELEPHONIC SEARCHER FOR USE IN THE BLADDER.

JACOBSON (*Annals of Surgery*, vol. xlv, No. 3) describes a telephonic bladder instrument, which consists of a Thompson searcher attached to the front of a telephone transmitter through the medium of a plug joint. The transmission to the ear of sounds produced by contact of the end of the searcher with stones or other objects is actually microphonic. So delicate is this lithophone that the character of varying surfaces may be nicely differentiated by lightly rubbing the end of the searcher over them. The tapping of hard objects produces sounds so loud as to be almost unpleasant to the ear. The searcher is introduced in the usual way, after which the

transmitter is connected with it. No stone, however small, will fail of detection if touched by the searcher, however lightly. Much may also be inferred regarding the constitution of a stone, its smoothness or roughness, hardness or softness, as determined by the sounds elicited.

A NEW METHOD OF DEALING WITH CLEFT PALATE.

STARR (*British Medical Journal*, June 29, 1907) modifies the customary operation for cleft palate by an aluminum plate so formed and placed that it not only diminishes tension but prevents the child from sucking on the stitches. After the customary preparation and denudation of the edges and suture with horsehair, aluminum of gauge 36 in thickness is bent at an angle where he wants it to fold over the outer side of the flap, passing it through one lateral incision; then by passing a pair of forceps into the opposite lateral incision he grasps the free end and pulls it down into the mouth cavity again. It is carried across it at the point to which it entered and the excess cut off. With a heavy needle the metal is easily penetrated at one or two points and may be secured in place by horsehair suture. To prevent the free end scraping and irritating the tongue, it may be turned up into the lateral incision and pinched with a pair of forceps. It affords excellent results.

DIAGNOSIS OF SYPHILITIC TUMORS OF THE BREAST.

BISSELL (*Medical Record*, July 6, 1907) states that gummata of the breast are not as rare as the authorities would lead us to infer, and that such late syphilitic lesions can be quite easily differentiated by careful diagnosis. Many breasts sacrificed in the belief that they were cancerous could have been saved by the proper diagnosis. In case of doubt an attempt should be made by the quick method of treatment to exclude absolutely the possibility of tumor being syphilitic. He reports five cases treated by one-fourth grain of arsenio-salicylate of mer-

cury. He notes that gummatous tumors develop slowly and painlessly, that they ulcerate and discharge much earlier than cancerous nodules, that they are free from nodules early in their course, that the nipple as a rule is not retracted, that the lymph glands near may not be enlarged.

The best treatment is by means of injection of the arsenio-salicylate of mercury, one-fourth of a grain of which is given every third day until the tumor begins to disappear, and combined, if needful, with the internal administration of iodide of potassium.

OPERATIVE INJURIES OF THE THORACIC DUCT IN THE NECK.

STUART (*Edinburgh Medical Journal*, October, 1907) has tabulated reported cases of injuries of the thoracic duct incident to surgical operations performed for the removal of malignant or tuberculous infiltrates. The symptoms during operation are plenty of fluid in the wound, which may be almost clear, as the patient has usually had no food for several hours; or clear, but mingled with whitish threads; or distinctly milky, like skimmed milk or milk mixed with water. Frequently a search reveals the cut end of the duct or a wound in the wall, from which the fluid escapes. This escape is often rhythmical, a little jet being expelled at each expiration.

Should the injury to the thoracic duct escape the notice of the surgeon during the operation, it is subsequently brought to his notice in one of two ways. When no drainage has been employed there are no symptoms pointing to anything unusual, until the wound is dressed for the first time, when a large effusion is found raising the skin in the supraclavicular region. This is generally regarded as due to blood, but on opening a corner of the wound a whitish liquid escapes, which has on several occasions been mistaken for pus; and for a longer or shorter period a fistula is established, from which there is a copious lymphorrhea or chyloorrhea.

The other way in which the wound of

the duct reveals itself after operation, especially after a drain has been inserted, is by a profuse chylorrhea which soaks the dressing, and sometimes the bed, with a milky fluid possessing a sweet or mawkish odor like that of blood serum. This discharge may show itself in a few hours or may not be seen for one or two days after operation. Associated with the lymphorrhea there is usually rapid emaciation and general lassitude and dejection, feebleness, pallor, great thirst, scantiness of urine, and sometimes tachycardia, headache, giddiness, and syncope. Patients are extremely hungry, and the discharge from the fistula becomes more milky during the period of digestion and absorption. In 14 of Stuart's 40 cases there was no postoperative chylorrhea. The wound in the duct was recognized during operation and appropriately treated. Of 40 reported cases 5 died, but Stuart is inclined to doubt that the duct wound was an important factor in any of these deaths.

Ligature of the duct has been shown to be a safe and satisfactory procedure. Ligature of the peripheral end is regarded as sufficient, the opening or openings of the central end into the venous system being guarded by valves which prevent any regurgitation of blood. Cushing successfully sutured a case. Porter and Keen have also used this method, but chylorrhea resulted for fifteen and two days respectively. Forcippresure has been tried three times, the forceps being left on the duct. Once this was done at the operation, and there was still some discharge for four days; twice forceps were applied as a secondary procedure with complete success. Packing has been only moderately successful. The conclusions Stuart draws are as follows:

The anatomy of the thoracic duct suggests that a wound or complete division of it in the neck need not, in most cases, be attended by serious consequences.

Surgical experience proves that, in an aseptic wound and with proper treatment, such injuries are rarely fatal, and if the injury is recognized during the operation, are

rarely followed by even a temporary chylous fistula.

The best treatment, if the wound of the thoracic duct is recognized during the operation, is ligature of the peripheral end; ligature of the central end in addition is in most cases unnecessary but can do no harm. Suture of a wound in the duct is worth attempting only in very favorable cases. Packing is only justifiable if the surgeon is unable to apply a ligature.

The best treatment, if the wound of the thoracic duct is not recognized till after the operation, is probably firm packing of the wound, which almost invariably results in cure with or without a comparatively short-lived fistula. Firm supraclavicular external pressure may be successful if the wound is firmly closed, and may also be successful even if the wound is not closed; there have been too few cases of this treatment to allow of a definite expression of opinion upon it. Probably where the accumulation in a closed wound is recognized as being chylous, supraclavicular pressure—the accumulation being left *in situ*—will be a safe and satisfactory method. The wound may be reopened and a ligature or forceps applied to the duct, usually with complete success; but this is a difficult procedure, and hardly justifiable unless packing has been tried and has failed.

Operative injuries of the thoracic duct are probably far commoner than is generally imagined. In many cases pieces of tissue are clamped before division and then ligatured, and it is likely that in some of these cases wound or division of the duct takes place, but is never suspected because of the previous application of the ligature.

SUMMARY OF A THOUSAND CASES OF APPENDICITIS.

CRILE (*Cleveland Medical Journal*, vol. vi, No. 8, 1907) holds that an acute abdominal pain and rise in temperature and tenderness, particularly over the appendix, with associated referred pain, are sufficient evidence of the disease to warrant the incision. If in addition there is nausea and

vomiting, rising leucocytosis, a history of previous similar attacks, and no evidence of other acute disease, the diagnosis may be considered certain.

Crile roughly groups the atypical cases as follows:

(a) Acute infection of the appendix with minimum local but maximum systemic manifestations, early complicated by bacteremia. In these cases there are usually early and perhaps repeated chills, high temperature, early delirium, rapid pulse, negative abdomen, positive blood culture, and usually death from bacteremia. In some of these cases the rôle of the appendix is discovered only at autopsy, and in others the diagnosis is reached only by inference and exclusion. These cases are compared by Crile to bacteremia arising from infection of the tonsils.

The importance of correct diagnosis in such cases is incident to the fact that in them operation should be avoided, since surgical infection reduces the natural resistance of the patient and hence lessens his chances of recovery. Maximum constitutional with minimum local symptoms foreshadow a fatal termination.

(b) Appendicitis appearing in the course of other diseases or local disturbances. The greatest number in this group occur in the course of gastroenteritis—the latter in children usually incident to obvious great error in diet. Vomiting, diarrhea, and intestinal pains are typical, but after a few days the peritoneal, in contradistinction to the mucosal, symptoms predominate. Nor is diagnosis likely to be made before the stage of peritonitis.

Crile observed four cases occurring after abdominal section. In none was there a history of previous attack, and the appendix was not disturbed during operation. Since these experiences Crile has in all favorable cases of laparotomy for other purposes excised the appendix when it came within the field of operation.

Also in the passage of right renal and ureteral calculi, beginning as definite renal colic. Moreover, an attack originating at the menstrual period may readily be over-

looked. In one instance Crile observed an attack of appendicitis develop in the course of a protracted passage of gall-stones. Also in a recurring attack of cholecystitis which was a sequel of a drained acute suppurative gall-bladder.

In the course of pregnancy a number of cases developed, but were more readily diagnosed than the preceding. The symptoms of appendicitis may be overshadowed by salpingitis or pyosalpinx, especially when the appendix is deep in the pelvis. In one instance acute appendicitis occurred on the fourth day after a typical ruptured tubal pregnancy.

One case developed as a complication of cancer of the cecum. In four instances acute appendicitis was followed so quickly by intussusception that the appendix and its symptomatology was completely obscured. A case occurred in the course of typhoid.

One acute case was operated on in the prodromal stage of smallpox.

One case exhibiting a typical scar, with the history of having the appendix removed, on operation was found to have a hardened, acutely inflamed appendix lying within the cecum, a small scar marking its base. This was obviously an instance of the inversion of the appendix into the lumen. At operation the cecum was opened and the inverted appendix was found dangling free in the bowel. It was removed, and the pathologic examination showed the usual picture of acute appendicitis.

(c) Altered anatomic relations of the appendix. The position of the appendix may vary so greatly as to render diagnosis difficult. In two instances of left-sided appendicitis diagnosis was probable rather than positive.

Crile notes that he has seen the appendix a number of times across the median line of the pelvis, attached to the left ovary, the left tube, the fundus of the uterus, the bladder; frequently to the right tube and ovary, the gall-bladder, the stomach, to the left of the median line, above the umbilicus, resting upon the liver, attached to large ovarian tumors, displaced by retroperitoneal tumors, or attached by adhesions to an en-

larged spleen. When, in addition to the anatomic displacement and adhesion, the inflammation of the appendix is limited to its distal end, as frequently occurs, it may become impossible to make a differential diagnosis. When the appendix rests upon the ureter, pain radiating down to the bladder, into the groin, into the testicle, or down the thighs may readily lead to mistake. Diagnosis can be made by catheterization of the ureters, by the *x*-ray, and by repeated examinations of the urine. When the appendix is attached to the ovaries, tubes, or uterus, and becomes inflamed, a certain group of symptoms due to the disturbance of these organs may cloud the picture of appendicitis.

(d) Cases first seen when late complications are present. This group of cases presents many difficulties in diagnosis. Crile notes that he has seen an instance of multiple abscesses of the liver caused by appendicitis, although the appendix itself had recovered.

It was only by the history of the case, almost forgotten by the patient, that a diagnosis was made. The same difficulty may be encountered in cases in which a retroperitoneal lymphadenitis has been produced by acute appendicitis, the appendix in the meantime recovering. In two instances the patient was first seen after considerable illness, and the symptoms all related to the bladder. Pus was freely discharging. In each, however, there was an unmistakable attack of appendicitis followed by local peritonitis and abscess, which in turn penetrated the bladder; and in one instance the tip of the appendix was discharged through the urethra.

The cases of "walking" appendicitis are characterized by a mass in the iliac fossa, dull pain, and lameness incident to interference with the action of the psoas muscle. The history will usually show evidences of earlier attacks of appendicitis.

Crile refers to one case in which popliteal abscess was the ultimate outcome of an appendicitis, the pus from which burrowed along the psoas muscle and dissected along

the lower plane, finally pointing in the popliteal space. In another instance the pus burrowed up through the diaphragm into the pleura and was coughed out.

(e) Chronic appendicitis may be characterized only by reflex disturbances of the gastrointestinal tract, such as indigestion, flatulency, diarrhea or constipation, unrelieved by medical measures. Often there is an occasional sharp, darting pain in the epigastrium or in the left side, pain or feeling of heaviness in the region of the stomach after meals, sometimes a feeling of accumulation of gas in the cecum, with perhaps a little peristaltic pain. Diagnosis in such cases is not possible except by a process of exclusion. Among the diseases which are often mistaken for appendicitis is a central pneumonia of the right lung, characterized by sudden acute abdominal pain differing little in location from the onset of many cases of appendicitis, associated with abdominal distention, constipation, right-sided tenderness, and temperature; but here one has the advantage of the low leucocytosis and the history of the onset. The respiratory hurry characteristic of pneumonia is absent in appendicitis, though it may be observed in an acute fulminant attack. In pneumonia the tenderness is diffuse and in the wall of the abdomen, elicited by picking up the skin between the thumb and finger; there is lacking sharp muscular reflex and referred pain on pressure over the appendix.

The onset of typhoid fever sometimes closely resembles an acute appendicitis—that is, the abdominal pain, right-sided tenderness, and temperature—but here one has the advantage of the low leucocytosis and history of onset. Renal calculi, cholelithiasis, perforation of the duodenum or of the intestines elsewhere, ureteral calculus, pelvic peritonitis, may all closely simulate appendicitis.

Crile calls attention to one group of symptoms which he finds of more value than any other, and which have assisted in determining the differential diagnosis in many cases. This is the Head zone of referred

pain and hyperesthesia. The more he has studied this diagnostic arc the more confidence he places in it. The appendix itself in disease does not as a rule cause pain. The pain is referred to this portion of the abdomen, the nerve supply of the appendix having a connection with definite segments of the spinal cord. The latter are in close relation with the origin of the sensory nerves arising from these segments. The impulses set up by injury or disease of the appendix pass up to and spread over the centers of the sensory nerve supply, causing radiation of pain over part or all of the abdomen. When the appendix is rapidly inflamed hyperesthesia may be found in the zone bounded by the middle line, Poupart's ligament, and the crest of the ilium. Sometimes in addition to this zone of hyperesthesia there may be another zone extending toward the back on the same horizontal plane of the body. Crile states that he has never observed in a supposed case of appendicitis this hyperesthesia, and has not been able to verify appendicitis at operation. Furthermore, in any case of appendicitis, be it acute, subacute, or chronic, if one carefully presses upon the appendix and asks the patient whether he feels the pain elsewhere there will in all probability be felt a pain which the patient will positively identify as the same pain from which he has been suffering. This may have been in the upper abdomen, perhaps following meals, or at irregular intervals. This symptom Crile regards as pathognomonic. He does not regard the hyperesthesia and referred pain, even when properly interpreted and carefully elicited, as infallible, but states that these two symptoms have served more than any other single symptom in controlling a diagnosis. This is especially true when one keeps in mind the Head zone in diseases of the kidney and ureter, and in diseases of the pelvis. All these various organs have a definite zone of reflexes and they do not overlap each other. In the differential diagnosis in all the various groups of cases Crile depends upon the Head zones.

MOVABLE SPLEEN.

MOORHEAD (*Practitioner*, No. 470, vol. lxxix, No. 2) notes that a movable spleen is usually bigger than normal; that traumatism is an occasional etiological factor. The tumor may be felt in any part of the abdomen, even within the pelvis, and in some cases slips down behind the colon. In the case he reports the diagnosis was probable hydronephrosis, supposed subsequently to have become purulent because of daily rigors and pus in the urine.

On operation the spleen was found axially rotated with the colon in front of it. The patient's condition was not sufficiently strong to warrant further operation, and the wound was closed without any attempt to fix the movable organ.

The author notes that the tumor exhibited the most extraordinary variations in size, and quotes Bland Sutton to the effect that the engorged spleen may shrink to one-third of its bulk during the course of a laparotomy. The alteration in size closely simulates that found in intermittent hydronephrosis.

As to the treatment of this condition, opinion is fairly evenly divided between splenectomy and splenopexy. The former is most frequently practiced, as it gives a permanent cure. In the latter recurrence has been noted.

CURE OF WRITER'S CRAMP BY BIER'S METHOD.

HARTENBERG (*Archives de Neurologie*; quoted in the *Practitioner*, vol. lxxix, No. 2) reports his experiences of the method of the elastic ligature in muscular disorders, such as contractions, spasms, cramps, and so forth. Without drawing general conclusions, he believes in the excellence of the method, and cites, by way of example, the remarkable result obtained in a case of writer's cramp. The patient was a clerk, aged thirty-seven years, who had suffered for fifteen years. His writing was almost illegible, especially toward the end of the day, and became impossible under stress

of anxiety. During the fifteen years he had alternate periods of slight improvement and aggravation. His general health was good, and he was a big, strong man, although nervous and impressionable. Every possible method of treatment had been tried without the least success. In 1905 Hartenberg saw the case, and advised the use of the elastic ligature, a treatment which the patient could carry out himself at home in the depth of the country. It consisted in simply tying a rubber tube round the arm above the biceps for twenty minutes, morning and evening, so as to produce the stasis recommended by Bier. After fifteen days the patient wrote to express his gratitude for the relief obtained, and two months later wrote again to say he was completely cured.

MAMMARY CARCINOMA AND THE DURATION OF THE RESULTS OF OPERATIVE TREATMENT.

FINSTERER (*Deutsche Zeitschrift für Chirurgie*, Bd. 89, H. 1-4) gives a full discussion of mammary carcinoma in its various phases based partly upon the literature, but chiefly upon the observation of primary operations on 520 women in the second surgical clinic of the University of Vienna, covering the period from 1877 to 1903. There were four patients between twenty and twenty-five years of age, and one between seventy-six and eighty years. Between these ages there was a gradual increase up to fifty-one to fifty-five, and from that time on a gradual decrease in the number of cases. Between fifty-one and fifty-five years there were 106 cases. Twenty-five of the patients had not borne children, while only six had a record of eleven to eighteen children. The greatest number of cases (56) occurred in those who had borne three to five children. In only three cases was there rapid diffuse infiltration of the breast, finally becoming bilateral in two of these.

In 180 cases in which the family history could be obtained, it was found that in 45 of these there was carcinoma in either

father, mother, sister, or aunt. In 606 cases examined at this clinic the cancer was on the left side in 313, and on the right in 286; in only four cases was it on both sides. The disease was localized in the upper outer quadrant in 193, the lower outer in 36, the upper inner in 45, and the lower inner in 16 cases; in the outer half in 45, the inner in 21, the upper in 64, the lower in 20, and was central in 41 cases. The time at which the cancer set in was determined with difficulty in many cases. In 20 cases it was first noticed when the size was from that of a pigeon's egg to a hen's egg, in 85 in size from a hazelnut to a walnut, and in 66 in size from a pea to a bean. In 35 cases it began as an ill-defined hardening. In the remainder of the cases the disease presented itself in the form of a little node. In 31 cases attention was called to the tumor by sticking pain in the breast. In one case there was pain in the nipple a year before any tumor was noticed. In nine cases a slight injury led to examination of the breast, at which time a tumor was found. The time which elapsed between the discovery of the tumor by the patient and entrance into the clinic varied from one month to fifteen years; in the largest number of cases it was one year. In all the cases of over four years' standing, 32 in number, only two were inoperable, and none of these cases refused operation. Of 115 cases of one year's standing admitted, 101 were operated upon, two refused operation, and 12 were inoperable. One case of two months' standing was inoperable.

The author says that the most important contraindication to operation is distant metastasis to the internal organs. A second contraindication is the absolute fixation of the tumor to the thorax, though operation has been done on a few of such cases. The third contraindication is the spreading of the cancer in lentil-like masses over the chest or *cancer en cuirasse*. However, the author's series presents nine exceptions to this. In one of these cases the woman is still living, seven years after the operation, and does her own housework. The gen-

eral condition of the patient, the age, and the presence of other diseases must be considered, the latter only in reference to the degree of development. The final contraindication is furnished by the presence of involvement of the supraclavicular lymph glands. This, however, is a much debated point. It is argued by some surgeons in support of this condition as a contraindication that when the supraclavicular glands are demonstrably enlarged the endothoracic glands are also already involved. In 51 cases of the author's series with disease of the supraclavicular glands operated upon, three died soon after the operation, one after eight months of a local recurrence, and another after a second operation four years after the first, in which the supraclavicular glands had been removed. In none of these five cases was there any involvement of the endothoracic lymph glands or the pleura. It may be stated that the clinically demonstrable involvement of the supraclavicular glands does not constitute a generally valid contraindication, for there have been cases of cure even if they are few in number. There are cases in which soon or several years after the extirpation of the diseased glands, when the patient comes to autopsy, no mediastinal involvement is found; also where there was undoubted recurrence in the supraclavicular region after four years there was still no disease in the mediastinum. It is also true that in cases which were not cured life was prolonged by bettering the general condition by operation. Out of 520 cases operated upon the results were as follows: Complete cure, 80 cases; local recurrence, 173 cases; glandular recurrence, 20 cases; recurrence in thoracic wall, 4 cases; internal metastasis, 42; died of intercurrent disease, 23; late recurrence and metastasis, 17; result unknown, 78; died after operation, 28; operation only palliative, 19.

The author concludes as follows: The permanent cures in these cases from 1877 to 1903 amount to 12.5 per cent. This was increased in the last ten years of the period to 26.64 per cent, during which time the

operation had been gradually extended beyond the local involvement. The best method of operation is that which lessens the local recurrence as well as seeks to prevent metastasis by the very important exact clearing out of the lymphatic glands, accordingly until now the most enduring results come from the procedure of Halsted.

Increased attention is to be given to the most complete removal of the skin. The supraclavicular group is best removed in each case, absolutely, when the infraclavicular glands are found diseased during the operation. The question whether in already clinically demonstrable disease of the supraclavicular glands an operation is still warranted or not lacks a positive answer because there are cases which are contrary to the rule of coincident involvement of the supraclavicular and intrathoracic glands and the pleura. In judging of each case a comparison of the duration of the disease, the size, the seat of the tumor (whether in the inner or outer half of the mamma), the size and the matting together of the supraclavicular glands, must be made. On account of the frequency of late recurrence the limit of the duration of healing which may be considered permanent should be extended to five years, and in judging the results the absolute outcome in each case must be constantly considered.

TRAUMATIC SEPARATION OF THE LOWER EPIPHYSIS OF THE FEMUR.

LUXEMBOURG (*Deutsche Zeitschrift für Chirurgie*, Bd. lxxxix, H. 1-4) says that usually the displacement of the epiphysis is backward or forward and very seldom lateral. Out of 700 cases collected by Poland up to 1898, in only two cases was the epiphysis displaced outward. In both of these cases amputation was done, and one of them died from pyemia. The author reports a case of lateral displacement of the epiphysis. The patient was a boy of seven years, admitted September 17, 1906. He had been caught by a draft wagon and hurled a considerable distance. He was

brought to the hospital unconscious. The right knee-joint was found to be reddened, much swollen, and its transverse measurement much increased. At the inner side of the knee, extending to the middle of the thigh and the tibia, the skin was scraped and soiled by mud. The tibia was bent outward at the knee at an angle of 130 degrees and somewhat flexed. At the outer side of the lower end of the femur the outwardly dislocated epiphysis could be felt under the tense skin, while on the inner side the lower end of the diaphysis threatened to burst through the tightly stretched skin.

On abduction a soft crepitation could be felt. The limb was warm throughout, the pulse palpable, and there were no disturbances of sensation in the cutaneous nerves of the leg and foot. Active motion of the knee-joint was impossible. A Roentgen picture taken at once showed a complete separation of the epiphysis with outward displacement of the same and tearing away of a small piece of bone from the lower outer part of the diaphysis. Under general anesthesia the parts were replaced by longitudinal traction and pressure upon the lower end of the diaphysis, and an extension dressing was put on with 15 pounds weight. At the same time traction outward was made on the lower end of the femur and the lower end of the tibia, while traction inward was made upon the epiphysis and upper end of the femur, each of three pounds.

On the first day afterward the temperature rose to 38.8° C., but there was no general disturbance. After October 15 both passive and active motion were practiced. The dressings were removed on October 20, and massage, faradization, and movements carried out. On October 28 the patient arose from bed and walked without support, though slightly lame, but otherwise moving quickly and safely. On November 3 he was discharged. There was no shortening and no stiffening of the joint, and scarcely any lateral motion at the knee-joint in the extended limb; no palpable thickening of the lower end of the femur; very little swelling of the knee-joint; gait quite buoy-

ant and secure; no limping; but little atrophy of the muscles. The Roentgen picture showed the epiphysis in normal position.

Examination on May 8, 1907, showed the patient to be perfectly free from trouble; he walked securely and buoyantly. Disturbance in growth, being absent at this time, was hardly to be feared later, as reposition had been accomplished immediately after the injury. As proof of this supposition the author cites a case of similar character in a boy fourteen years old at time of injury, which he had an opportunity to examine eight years after reposition of a dislocated epiphysis of the femur. In this case no difference could be found between the two lower extremities, and the patient, being unable to get excused from military duty, had to do service in the artillery.

MOVABLE KIDNEY.

GALLANT (*New York Medical Journal*, vol. lxxxvi, No. 11) observes that in the absence of a more reasonable explanation of the inception of cholecystitis, and in view of his experience of the past seven years in the treatment of these cases, he has been led to attribute the genesis of this disease to traction by a more or less movable kidney on the cystic or common ducts, and in substantiation thereof he offers for consideration the following data:

Cholecystitis, with or without jaundice, is most commonly met with in the same type of women as that in which we most frequently find dislocated kidney.

The onset of the trouble is usually in the form of a so-called "bilious" attack, characterized by sick-headache, indigestion, epigastric pain, bloating, nausea, vomiting, making the patient feel wretched enough to be glad to lie down, and in a short time to go to sleep. The horizontal posture allows the kidneys to recede enough to relieve the tension on the ducts, puts an end to the biliary obstruction, and for the time being to the attack.

Subsequently these attacks recur, but with increasing severity, longer duration, greater frequency—usually designated Dietl's crises.

With all these features, in addition there is severe pain extending from the epigastrium or hypochondrium through to the tip of the right scapula, of a boring character, frequently severe enough to require liberal doses of morphine to afford relief, which is rarely secured until the patient lies down and falls asleep. The next morning she may be able to get about, or on sitting up or semireclining the same symptoms may be repeated, sometimes day after day for weeks, or at infrequent intervals, but each one progressively worse, as the bile tract becomes more seriously involved.

Examination in the semireclining or standing posture shows a considerable mass at the right chondral border, which may be the lower inch or two of an enlarged kidney, adherent, or partially replaceable; or in front may be the distended gall-bladder, which can be emptied by gradual, firm pressure; or the elongated edge of the liver may project in front of and over the kidney and obscure its contour. The kidney is usually very tender, the rectus rigid, the conjunctiva of a bilious hue, the skin may be tinged or deeply stained, and bile pigment can be found in the urine. If the attack has lasted several days the stools will be light or clay-colored, but transient attacks do not discolor the feces. The gall-bladder may or may not be palpable (distended); hydro-nephrosis is but rarely present.

Lilienthal, in 1896, called attention to "the important fact that a swollen gall-bladder may exist without liver or gall-bladder disease, and emphasizes the necessity for guarded diagnosis even in cases which may look plain at first sight." Richardson in fifty-nine operations on the gall-bladder reports ten cases of acute cholecystitis without any known reason, and with no gall-stones present. Johnston, Fenwick, Treves, Holmes, Delaney, and others found that the pressure or traction of the kidney on the bile-ducts was the only assignable reason for recurrent attacks of typical "gall-stone" disease, which did not recur after the kidney had been sutured. The cystic duct has frequently been found occluded by stone and enormously distended, yet intermittent jaun-

dice prevailed without any evidence of common-duct obstruction by a supposed stone which was thought to have escaped into the bowel and was but rarely found in the stools. Lilienthal admits that it has seemed to him far from rare to hear of pain, in some instances quite severe, after almost any operation for gall-stones; and in two instances colic and jaundice followed after complete removal of the gall-bladder, no stones being found in the stools.

It is of interest to note that all cases, so far recorded, which have been operated on for the removal of biliary calculi, without gall-stones being found, and the jaundice attributed to mobile kidney, have occurred in female patients.

J. Hutchinson, Jr. (*Practitioner*, xv, pp. 186-194, 1902) offers the following factors to explain the occurrence of obstructive jaundice with floating kidney: (1) Downward displacement of the third part of the duodenum, with stretching of the common bile-duct; (2) displacement of the gall-bladder and sharp kinking of the cystic duct; (3) torsion of the third part of the duodenum and perhaps of even the bile-duct; and yet he admits that "floating kidney by itself and without intervention of gall-stones may produce severe cholecystitis, and obliteration of the gall-bladder is a fact proved by one of the cases to be (by him) narrated, and it is a fact which is not generally admitted by physicians. . . . At any rate, the connection between floating and misplaced kidney with biliary obstruction is an important one, and in order that treatment may be properly directed it deserves to be borne in mind." The "probability" of Mayo Robson must ere long become a certainty; and the importance of recognizing this condition, before stasis and stone formation has begun, must be appreciated.

Gallant quotes the histories of ten cases and describes the application of his corset as follows: This must be made to order, of fashionable design, fitting very tightly over the hips and suprapubic area, gracefully curving in at the waist and with ample room above the waist line for the accommodation of the replaced abdominal organs,

especially the stomach. When about to put on the corset the lower lace must be loosened, the garment wrapped around the waist; the woman then lies down on her bed, bends her knees, raises the hips as high as possible, rubs the abdomen upward so as to massage the stomach and colon toward the diaphragm, hooks the corset in front, beginning with the lowest and working up to the top, and then, with the hips still raised, draws in the lower lace from the waist down until it is as tight as can be made. In thin women it is necessary to cushion the inside of the corset from the anterior spines back to the middle line. A properly constructed corset does not require any straps, belts, buckles, cushions, air-pads, or elastic in its construction, except the ordinary garters, which are only put on for convenience in holding up the stockings. The corset must be worn all the time except when lying down.

Under the regular methods of treatment, with the patient half sitting up in bed, as he much prefers to do, the attack may last for a few days or weeks; while on the other hand, if the patient is made to lie flat on the bed, with the foot raised ten to twelve inches, the head only resting on a pillow, the kidney being replaced and the gall-bladder emptied by careful manipulation, the abdominal wall supported by Gallant's "stock" bandage or Rose's plaster strapping, the nausea and vomiting will cease, the pain subside, the temperature if raised will drop, and the discoloration of the skin quickly fade away under the active use of salines. In a short time the kidney becomes free, diminishes in size and returns to its normal bed, and if a properly fitting corset is worn the attacks will not recur unless the patient goes about without it.

From the foregoing data Gallant feels justified, at least tentatively, in adopting the following conclusions:

That the inception of disorders of the biliary tracts arises from traction or pressure on the bile-ducts by a prolapsed kidney. At first there is but slight mobility, slight traction, and a slight attack, of a "bilious" nature, with or without jaundice. It is

owing to the transitory nature of the attack during its incipency that examination is but seldom made, or the kidney cannot be palpated because it has slipped back, as soon as the patient lies on her back, and the gall-bladder empties itself as soon as the tension is released. The mobile kidney gradually increases in size and mobility, exerting greater traction, causing greater obstruction, greater bile stasis, greater colic and jaundice, with infection, precipitation, stone formation, ulceration, perforation, and sometimes cremation.

That these attacks can almost always be arrested and the diagnosis established by placing the patient in a bed with the foot raised ten inches, and replacing the kidney by careful manipulation.

That by the early recognition of the kidney mobility as the cause, in the early stage of the disease, and the early wearing of a special corset, exacerbations can be prevented, further progress of duct disease avoided, gall-stone formation eliminated, operations for its removal reduced to a minimum, and at the same time by the use of the corset we overcome the bad effects arising from ptosis of other abdominal viscera.

When pain, fever, and jaundice do not diminish or subside within twenty-four to forty-eight hours, or unmistakable signs of severe infection or peritoneal invasion are present, operate quickly and thoroughly.

BIER'S VENOUS STASIS IN ACUTE GOUT.

ALKAN (quoted in the *Practitioner* for August, 1907) recommends the use of Bier's stasis in the treatment of gout in the acute stage, in view of the fact that blood-serum is the best solvent of uric acid. He reports some successful results, and advises that with the hyperemia should be associated alternately hot and cold applications locally, the constricting band being removed at the end of two or three hours. Thereafter he keeps the limb elevated, applying cold compresses for two hours, and then hot fomentations. This treatment quickly puts an end to the attack.

DISPLACEMENT OF THE INTERNAL SEMILUNAR CARTILAGE OF THE KNEE-JOINT.

RAWLING (*Practitioner*, No. 471, 1907) notes that the only common form of the displacement of the semilunar cartilage is that in which the anterior part of the internal cartilage is torn away from its tibial attachment, or from the transverse ligament, occupying any position between the two extremes of outward projection toward the triangular space that lies on the inner side of the joint between the patella, femur, and tibia, and that of inward dislocation into the intercondyloid notch. Commonly the floating end of the cartilage occupies a position intermediate between these two extremes, and is consequently liable to be nipped between the two bones at any moment. The actual detachment of the cartilage usually takes place during the carrying out of some violent form of exercise, during which the body is twisted violently to one side, whilst the leg remains firmly planted on the ground. As a result of this the femur is forcibly rotated inward on the tibia, and the internal condyle, coming into sudden and violent contact with the anterior part of the internal semilunar, tears it away from its tibial or other attachment.

In the subsequent attacks the detached portion is nipped between the two bones before it has time to be displaced to some safe position.

The symptoms are acute pain, often fixation in flexion, relieved by manipulation and followed by effusion and recurrence of these attacks. In the treatment of the first attack reduction is a point of first importance. The patient is placed on his back and grasps firmly with both hands the fully flexed thigh, whilst the surgeon, standing on the other side of the affected limb, grasps the condylar region with one hand and the malleolar region with the other, and, steadying the thigh with his own, fully abducts the leg on the thigh so as to increase, as much as possible, the space between the inner articular surfaces of the femur and tibia. The tibia is then rotated inward and outward, and finally fully extended on the

thigh, the limb being brought down as the extension is increased. At some time during the course of these manipulations the cartilage slips, often with a distinct click, out of its constrained position.

The administration of an anesthetic may be needful for reduction, or should this fail, incision must be made and the cartilage removed.

Rawling advises after the first attack confinement to bed for a week with an ice-bag to the knee, followed by massage and passive movement and exercise daily, the knee being firmly bandaged. The tendency to recurrence can be controlled, and in some cases prevented, by the adoption of a mechanical apparatus which consists of lateral knee-irons with transverse connecting straps, interfering but little with the extension and flexion of the joint, but limiting or preventing any act of rotation of the tibia on the femur. As the object of treatment is fixation of the semilunar cartilage, failure to accomplish this must be followed by removal of the detached portion as affording the only prospect of success. The cartilage is exposed by a vertical incision, after which the capsule is sutured. The knee is splinted for seven days, after which passive motion is begun by manipulation. It is stated that the results obtained by operation are excellent, and that it is quite exceptional for the patient to be anything but completely satisfied with the strength and general utility of the limb—a view which it is only fair to state is not in accord with that of many who have had a wide experience with this class of cases.

THE PRESENT POSITION OF SPINAL ANESTHESIA.

STRAUSS (*Deutsche Zeitschrift für Chirurgie*, Bd. lxxxix, H. 1-4) presents a complete discussion of the subject of spinal anesthesia upon the basis of the literature and his own observations, and concludes as follows:

Tropacocaine is at present the least dangerous anesthetic for spinal anesthesia, although it also produces a series of secondary

and after-phenomena and can even produce death. The dose should rather be too small than too large. Six centigrammes of tropacocaine seem to be sufficient for all cases.

Keeping the pelvis high and withdrawing considerable fluid permits with greatest safety the production of more profound analgesia. The addition of adrenalin appears rather prejudicial than useful and is therefore to be avoided. Minute attention to the technique is necessary to the avoidance of danger and bad results. The average duration of the analgesia is one hour. With a certain exactitude the peritoneum, lower extremities, and lower part of the abdomen are anesthetized. Secondary and after-results are greatly reduced by careful technique and selection of the cases, but not completely eliminated. For the employ-

ment of spinal anesthesia there are quite definite indications and contraindications. The method is indicated in all old, decrepit patients in whom narcosis in other ways is not suitable, or in pulmonary tuberculosis or diabetes. Contraindications are age up to fifteen years, neuro- or psychopathic conditions, brain and spinal cord diseases, septic diseases, and all operations which can be carried out with local anesthesia. Caution must be exercised in all cases of tuberculosis, syphilis, kidney disease, and in advanced arteriosclerosis, especially of the cerebral vessels. Employed in suitable manner and in appropriate cases spinal anesthesia offers many advantages, nevertheless the method is never without danger. The most efficacious means of lessening the danger consists in a conscientious restraint of its use.

REVIEWS.

PROSTATIC ENLARGEMENT. By Cuthbert S. Wallace, F.R.C.S., and Leonard S. Dudgeon, M.R.C.P. London: Henry Frowde, 1907.

This book adds but little to our knowledge of the subjects under discussion, and gives throughout evidence of the sort of loose writing that usually indicates loose thinking. This begins in the preface, where Mr. Wallace says: "The results of castration and vasectomy have been summarized, because it appeared that the effects of these operations on the testicle and prostate were but little appreciated." It is generally believed that the effect of castration upon the testicle has been well known and fully "appreciated" from the remotest antiquity. "Gone but not forgotten" would probably summarize the usual effect as well as any quotation, unless "Though lost to sight to memory dear" were considered more appropriate.

The author continues (still in the preface): "That vasectomy should have been revived in 1894, to produce an effect on the prostate by its supposed power to bring

about an atrophy of the testicle, when it had been shown in 1825 by Astley Cooper that section of the vas had no effect on the testis, is a striking example of how work previously placed on record may be completely forgotten." It is a favorite rhetorical trick to set up a bogey man and then demolish him. The only trouble about the quoted statement is that vasectomy was not thought, in 1894 or at any other time, by any reasonable person, to produce its effect on the prostate by causing atrophy of the testicle; and that Astley Cooper did not in 1825, or any other year, show that section of the vas has "no effect" on the testis. Curling, Griffiths, and others have shown conclusively that occasionally, though early, the effects are distinct and sometimes marked. Otherwise Mr. Wallace's assertions are presumably correct, though we haven't verified his dates.

He goes on (still in the preface) to say of carcinoma of the prostate that "it would appear that while in some cases it can be clinically diagnosed with certainty, in other

cases its presence is only revealed to the microscope"—an epoch-making announcement!

These prefatory experiences, it must be confessed, did not tend to produce in the reviewer a favorable mental attitude toward the teachings of the book.

In considering the subject of vasectomy, Mr. Wallace says: "White, although he recognized the fact that section of the vas did not affect the testis, thought that it might have some effect on the prostate, and performed vasectomy on dogs with the idea of determining its effects on the prostate. As a result of these experiments, he stated that there was a marked loss of weight and size in the prostate within a short interval after the performance of vasectomy. In fact, his results were the same as those obtained by castration."

This is incorrect. If he had said "similar to" instead of "the same as" he would have been less inaccurate. We find in White's original paper on this subject (*Annals of Surgery*, July, 1895) that he said there was a "constant loss of weight" in the prostate, "and that after fifty-two days the atrophic changes were unmistakable;" but he adds: "If these results are reliable it will certainly be worth while to investigate still further the effect of obliterating the vas, although outside of these experiments there would seem to be every theoretical reason to agree with Griffiths," who believes that in view of the slight effect upon the testis "it must be doubtful whether the operation will suffice to influence the enlargement of the prostate."

White's final remark as to this matter is: "My experiments need repetition and confirmation, as the absence of corresponding testicular change seems to make the results somewhat anomalous. It is possible that the incision or severance of small but important nerves may account for the effect on the prostate."

The Bacteriological Section of the book (ten pages) is of some negative value. Mr. Dudgeon concludes: "It appears from a bacteriological examination of tumors of the prostate that microorganisms cause a certain amount of inflammation, which pro-

duces enlargement of the gland, but bacterial infection is a secondary event, and similar to that which so often occurs in tumors elsewhere in the body; that a bacteriological examination of the urine may throw little or no light on a similar examination of the prostate; there is no evidence to support the view that enlargement of the prostate gland, such as is referred to in the text, is of gonorrheal origin." These conclusions are certainly not revolutionary.

A partial list of the various theories of causation is given (several being ignored), and the author is of the opinion that "the neoplastic theory accounts satisfactorily for the observed facts found in most cases of enlargement of the prostate. Those cases in which no enucleable tumors are produced, and in which gland tissue is for the most part wanting, offer a difficulty, but this difficulty cannot be surmounted by invoking a chronic inflammatory process, for the simple reason that there are no signs of such a process in histological sections. The presence of desquamated epithelial and of polymorphonuclear cells in the glandular alveoli is due to a secondary infection of a preëxisting tumor."

When operation comes to be considered the author quotes liberally from his papers in the Pathological Society's Transactions (as he does throughout the book) as to the nature of the enucleation operation and as to the possibility of the so-called "total" prostatectomy. Much of it has but little practical bearing.

His "conclusion" as to prostatectomy is: "There can be no doubt as to the success of prostatectomy in the adenomatous form of the enlargement, provided that the operation is performed on patients with reasonably sound constitutions. On the other hand, disaster can only be expected if the operation is performed on individuals worn out by pain and sepsis."

Both assertions are so worded as to be valueless. It is as absurd to say that there "can be no doubt" of success in the one case (if "success" means no mortality and satisfactory cure) as it is in the other to assert that "disaster can only be expected."

Of course, he means "only disaster can be expected," but even then he's wrong; and, in fact, after reading the book one is left with the impression that it is not very important or useful to find out what he *does* mean. J.

TEXT-BOOK OF OPHTHALMOLOGY. By Ernst Fuchs, Professor of Ophthalmology in the University of Vienna. Authorized Translation from the 11th revised and greatly enlarged German edition, with numerous additions by Alexander Duane, M.D., Surgeon Ophthalmic and Aural Institute, New York. With 441 Illustrations; 3d Edition. J. B. Lippincott & Co., Philadelphia, 1908. Price \$6.00.

It is with unqualified pleasure that the reviewer puts his stamp of approval on this book. To be able to state sincerely and truthfully, without limitations, exceptions, or apologies that in his opinion no superior text-book on ophthalmology has ever been published, is in itself a genuine satisfaction. Unfortunately it often happens that the reviewer considers it to be his duty to praise for the sake of the author or the publisher or for some personal reason the book he is reviewing, and he criticizes sparingly and usually in unimportant details, or avails himself of the opportunity to show to the readers of his review his own superior wisdom or knowledge of the literature.

For twenty-five years Fuchs has been a household word among ophthalmologists, and his works have found places in the libraries of most of them. They felt they could not afford to be ignorant of the theories and methods of practice of the man who instantly became famous upon the publication of his monograph "The Prevention of Blindness." The ten previous editions of his text-book were received with great and increasing favor. His industry, intelligence, and ability made him the able successor to his distinguished chief, von Arlt, and his agreeable personality made him popular with the many American and English students who sought his instruction in his Vienna clinic.

A detailed review of the third English edition is unnecessary. Dr. Duane has not only faithfully translated the original, but has rendered it in his familiar and correct English. Moreover, he has added numer-

ous interpolations, explanatory, timely, and well selected, that add immensely to the value of the book, especially to the American student. Dr. Duane has won a well deserved reputation not only as a translator but as a thoughtful student of the most abstruse of subjects pertaining to ophthalmology and as a careful and able writer. Both names, that of the author and that of the translator, are a guarantee of the value of the book, representing as they do German and American modern practice.

To illustrate the author's method of treating his subjects a few abstracts are here given. The choice of material has not been made with the thought of comparison with other subdivisions or with the writings of other authorities, but simply as an indication of the thoroughness and practical character of the treatment that prevails throughout the entire work. Ophthalmologists have been particularly interested in Fuchs's recent exposition of "proliferating uveitis," commonly known as sympathetic ophthalmia. In this connection he says: "Sympathetic inflammation develops sometimes in immediate conjunction with preceding symptoms of sympathetic irritation, sometimes without any intermediary symptoms at all and quite unforeseen." It is supposed that the sympathetic disease may appear not only in the form of an iridocyclitis, but also under some other guise. The greatest variety of affections have been described as sympathetic. Among non-inflammatory affections, cases of paralysis of accommodation, of amblyopia, and of blepharospasm have been adduced as sympathetic; among inflammatory affections in the posterior division of the eye, neuritis, choroiditis, and glaucoma; and in the anterior division of the eye, conjunctivitis and keratitis. The fact that an eye has been destroyed through traumatism by no means justifies us in regarding, without further proof, any subsequent disease of the other eye as sympathetic. "These and other considerations against the optic nerve and ciliary nerve pathways have led to the view that perhaps the transfer of the noxious influence, which presumably consists of bac-

teria, takes place by means of the blood current in a way analogous to that of metastases." Of the treatment of glaucoma simple, that much-discussed subject, he says "it is not a question of interfering within a few days or weeks, as is often the case in inflammatory glaucoma, but even here the operation should not be long deferred; the earlier we operate, the better results we obtain."

The contents are divided into four parts: the examination of the eyes, the diseases of the eye and its appendages, the anomalies of refraction and accommodation, and operations. No important detail is omitted, and the thoughts are clothed in language both interesting and instructive. The work appeals to the student of ophthalmology, the oculist, and to the general practitioner. No extracts and no favorable reviews can convey an adequate conception of the immense value of this book. One should read it thoughtfully and deliberately, and then he should study it, and finally he should refer to it for help in the diagnosis and treatment of every dubious case. He will find it fulfils every requirement of a modern textbook.

H. F. H.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M.D., assisted by H. R. M. Landis, M.D. Volume I, March, 1908. Lea & Febiger, Philadelphia, 1908.

The present volume of *Progressive Medicine*, the first for the current year, contains an exhaustive article of over 100 pages upon the etiology of the head, neck, and thorax by Dr. Charles H. Frazier, whose articles upon this important subject in previous issues have proved so exhaustive and valuable. We consider that the present article is the best that Dr. Frazier has ever contributed on this subject. It reveals a wide investigation of current literature and the result of personal experience. That upon the infectious diseases, by Robert B. Preble, containing 40 pages, is also of considerable interest, and while it is shorter than usual, its author points out that though the literature has increased in volume the number of noteworthy facts and

advances have been comparatively meager. In discussing the question of opsonic methods in diagnosis and treatment, Dr. Preble expresses a view which has been held by the writer of this notice to the effect that results are not such as to warrant the great enthusiasm shown by some. Dr. Crandall's article upon diseases of children is 30 pages in length, and deals with many interesting practical problems, such as the gastrointestinal diseases of children, habitual vomiting in infants, infant foods, and the significance of albuminuria and hematuria in this class of cases; and in Dr. Kyle's article upon rhinology and laryngology, a careful consideration of the newer operative procedures in this field of special medicine is presented. The closing article of the volume, by Dr. Arthur B. Duell, of New York, upon otology, is a brief but very excellent summary of many of the advances which have been made in this special department of medicine.

THE DIAGNOSIS AND TREATMENT OF PULMONARY TUBERCULOSIS. By Francis M. Pottenger, A.M., M.D. William Wood & Company, New York, 1907. Price \$3.50.

This manual of nearly 400 pages, written by Dr. Pottenger, with whose contributions to the *THERAPEUTIC GAZETTE* many of our readers are familiar, has been prepared, as its title-page indicates, with the special purpose of emphasizing the important facts in connection with the diagnosis and treatment of this wide-spread disease. In connection with treatment it is important to remember, as Pottenger points out, that there are six classes of remedial measures to be considered:

First, those which aid in bringing about immunity by restoring the natural resistance of the individual, or, in other words, those agencies, such as fresh air and sunlight, which increase his vitality.

Second, those measures which aid immunity by stimulating the body cells to the production of specific protective substances, in which class, of course, is considered the employment of tuberculin and opsonic vaccines.

The third class consists in the develop-

ment of protective substances by protective bodies derived from animals—in other words, antitoxins, a source which at present is largely hypothetical.

The fourth series of measures consist in those which will increase the flow of blood or lymph to the area of disease.

Fifth, those measures which relieve distressing symptoms; and last of all, those which are directed toward the combating of the associated mixed infections.

The volume is divided into twenty-two chapters, with an appendix containing five chapters. The first seven chapters are devoted to the etiology, symptoms, and signs of tuberculosis in its various stages, and the remaining chapters to prognosis, prophylaxis, and treatment. The appendix deals with the duties of the state in preventing the spread of tuberculosis, the study of tuberculous infections, and a consideration of the culture products used in the treatment of the disease; and last of all, a so-called critical study of tuberculin and allied products based upon a collective investigation.

The volume closes with an exhaustive index.

Although specialists in the care of tuberculosis and general practitioners may differ from Dr. Pottenger at times in the views which he expresses, the book is undoubtedly a valuable one, and contains much that is of great interest and importance to every practitioner of medicine.

NERVOUS AND MENTAL DISEASES. Edited by Hugh T. Patrick, M.D., and Charles L. Mix, A.M., M.D. The Practical Medicine Series. The Year Book Publishers, Chicago, 1907.

This small volume, about the size of ancient Braithwaite's Retrospect, familiar to many of our readers, contains about 250 pages, and is devoted, as its name indicates, to a consideration of the literature of nervous and mental diseases for the preceding twelve months. Only 18 pages are devoted to Mental Diseases out of the 277 pages of the volume, the rest being given to the neuroses, diseases of the brain and its meninges, the cord, and peripheral nerves. Anything which Dr. Patrick contributes in

the way of neurological work is always well done, and this is no exception to the general rule.

THE PRACTICE OF MEDICINE FOR NURSES. By George H. Hoxie, A.M., M.D. W. B. Saunders Co., Philadelphia, 1908. Price \$1.50.

The purpose of this small book, as its title indicates, is to provide trained nurses with a summary of the chief symptoms of the various diseases which they will commonly be called upon to care for under the direction of a competent physician. It is always a difficult task to prepare a work of this kind. On the one hand there is the danger of saying too little, and on the other there is that of giving so much instruction that the nurse will take it upon herself to carry out methods of treatment which will be disastrous on the principle that "a little knowledge is a dangerous thing." Between this Scylla and Charybdis Dr. Hoxie has sailed a safe and satisfactory course, and the book can be recommended for the class of readers for which it was prepared.

A CHEMICAL BASIS OF PHARMACOLOGY. By Francis Francis, D.Sc., Ph.D., and J. M. Fortescue-Brickdale, M.A., M.D. Edward Arnold, London, 1908. Price 14s.

This volume is not in any sense of the word intended as a text-book of therapeutics or pharmacology. On the contrary, as its title indicates, it is prepared with the object of providing us with a conception of what has been done in connection with the important subject of the relationship of chemical constitution and physiological action, a field in which perhaps the most work has been done by Crum-Brown, Fraser, and Stokvis. It is, more accurately speaking, an introduction to pharmacodynamics based upon the study of carbon compounds, and many interesting illustrations are given to show how a change in the chemical formula or construction of a given product will very materially alter its physiological effect. It is emphatically the best summarization of our present knowledge of this subject which has appeared, and can be cordially commended for the excellent presentation of what to most men is a somewhat involved analytical subject.

CORRESPONDENCE.

PARIS LETTER.

BY R. H. TURNER, M.D. (PARIS).

At a recent meeting of the Society of Dermatology Dr. Audrain, of Caen, described the excellent results he had obtained in the treatment of prurigo of Hebra by broth made with fresh pig's liver. Every other day one hundred grammes of liver was hashed up and crushed, a glassful of boiling water poured over it, and the whole allowed to digest for three hours. After filtration the liquid was given the child in three or four doses. After the third day the pruritus disappeared and sleep was natural. After ten days there were no more signs of scratching; the doses were given at more infrequent intervals, and in six weeks there was not a trace left of the disease.

Drs. Stodel and Galup have cured a large syphilide of the breast by means of intramuscular injections of colloidal mercury prepared by one of the authors in the laboratory of Professor Dastre at the Sorbonne. Eleven injections of three cubic centimeters each were sufficient to obtain a cure.

It is interesting to note how the sums left for charity vary every year in France. In 1903 the amount aggregated 80,000,000 francs; in 1905 the total was only 39,360,000 francs. The religious institutions show that the Israelites give even more than the Roman Catholics, 29,775,000 francs being credited to the former and 27,440,000 francs to the latter. The bequests for tuberculosis have singularly diminished, falling from 1,147,000 francs in 1903 to 112,000 francs in 1906. The Pasteur Institute has only received 10,000 francs during the last two years.

In a recent number of the *Presse Médicale* Dr. Chaput has described the technique he employs at the Lariboisière Hospital when performing an operation by rachistovainization. He prefers to use a needle cut on a long slant, and the solution he injects contains in each cubic centimeter one milli-

gramme of scopolamine and one centigramme of morphine. One-fourth of this is injected an hour and a half before the operation. Dr. Chaput prefers to employ stovaine alone rather than a mixture of cocaine and stovaine, and the dose to be used varies according to the operation—4 centigrammes for the arms and the lower limbs, 5 centigrammes for hernias, 6 centigrammes for laparotomies, and 8 or 9 centigrammes for operations on the breast and arm. A solution of 20-per-cent caffeine should always be ready in case of need as well as some artificial serum. Another point on which Chaput insists is the usefulness of removing a certain amount of cephalorachidian liquid. The amount varies between 10 and 30 cubic centimeters, according to the part operated on, the smaller amounts being sufficient when the lower limbs or arms are operated on. Syncope is seen in aged patients, and in one case Chaput was obliged to inject caffeine and serum. When the accidents are serious the following means should be employed: Caffeine in the reclining position, and serum under the skin or into the veins. Dr. Chaput has had a case of tardy hemiplegia in a patient seventy years old, whose family refused to allow a certain amount of liquid to be removed when headache and nervous symptoms came on.

In one of my preceding letters I spoke of the preventive treatment of syphilis by the use of calomel ointment. At a recent meeting of the Society of Medicine of Paris Dr. Butte demonstrated that in two cases this ointment did not prevent the appearance of syphilis. Dr. Paul Guillon also cited three cases, and in the French army this ointment is not considered infallible.

At one of the recent meetings of the Academy of Medicine Dr. Widai, the champion of the treatment of Bright's disease by the limitation of the amount of salt taken, discussed the advisability of limiting the amount of liquids taken by patients suffering from Bright's disease. Dr. Widai reminded the assembly that Von Noorden

had already shown what disastrous effects resulted from giving these patients too much liquid. Usually a patient can stand drinking two liters of liquids, but this amount is too large in certain cases. The milk diet which has so often been given to these patients led to the absorption of four or five liters of milk, an amount which caused fatigue of the heart and vessels. Dr. Widal considers milk a most useful adjunct of the vegetarian diet, but its use should not be carried to excess.

The first of the lectures of the medical *entente cordiale* took place two weeks ago at the Faculty of Medicine, and Sir Dyce Duckworth spoke on diatheses and the personal factor in the treatment of disease. Sir Dyce Duckworth's discourse was a plea in favor of the older principles of considering not only the disease, but also the patient, and his remarks were those of a champion of the ideas on humorism and diatheses. Each patient's constitution is an important factor in the character of the disease, and in the treatment of a morbid condition this fact should not be lost sight of. The rôle of the physician is not only to make a careful diagnosis, but also to know how to treat the disease, and in this a physician is as much an artist as a man of science.

Dr. Ausset, of Lille, has studied the results of the tuberculin ophthalmic reaction in children. Out of 300 cases there were 125 positive reactions, 56 slight and 49 quite intense. No accidents were seen even in six very pronounced cases. Out of 28 cases that were clearly tuberculous 24 reacted. In 35 cases which were suspected of tuberculosis 21 reacted, and they all proved ultimately to be tuberculous. When this reaction is tried on patients who are living with tuberculous subjects the results are generally positive, 61 per cent showing the reaction, whereas in 191 cases where there was no heredity the reaction was only noticed in 31 per cent. Where the children have had measles, whooping-cough, or adenoid vegetations, the results are very useful, and Dr. Ausset considers this method a most valuable one in clinical investigations.

The public health in Paris during the last month has been fairly good. Typhoid fever remains relatively rare, there being only four to seven deaths weekly caused by this disease. Smallpox is quite rare, but on the other hand measles is very prevalent, 21 deaths being due to this disease, and five to scarlet fever, during the last week. Grippe is not at all as prevalent as in England, and the general mortality is quite inconsequential compared to that in other countries. In the northern part of France there is quite an outbreak of grippe at Verdun, a military town, where fourteen soldiers have died from this affection during the last month. Pneumonia is not common, and does not show itself as frequently as in New York.

Dr. Masini has indicated in a thesis sustained recently at the Paris Faculty of Medicine what the ideas of Professor Reclus are on the treatment of complicated fractures due to the crushing of a limb. In a first period right after the accident there is stupor of the tissues, traumatic shock, and hemorrhage. Medical treatment is the only advisable one at this time. The surgeon only has to stop hemorrhage, or to amputate when there are only a few shreds to cut through. In the second period, which lasts about fifteen days, the patient runs the greatest risks. Still efforts should be made to save the limb unless it is at the expense of the life of the patient. In the third period there are local complications, such as suppuration, causing necrosis of the bones and soft parts. Thanks to Reclus's treatment, it is often possible to save the limb. A fourth and last period is sometimes seen, characterized by pseudarthrosis.

Dr. Reclus's method consists in washing the wounds with hot saline solution and oxygenated water. When the wound is well washed and hemostasis assured, an ointment made with vaselin containing bichloride of mercury, carboic acid, iodoform, boric acid, salol, and antipyrin is applied. A plaster splint is adjusted and the limb placed in a cradle. The dressing is only changed after three weeks. Injections of serum are of course very useful.

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ORIGINAL COMMUNICATIONS.

AN ANALYSIS OF PSYCHOTHERAPEUTIC METHODS.¹

BY F. X. DERCUM, M.D.,

Professor of Nervous and Mental Diseases, Jefferson Medical College; Neurologist to the Philadelphia Hospital.

Mysticism and superstition have in all times played a rôle in the treatment of disease. Of the truth of this statement many historical examples might be given, but I will not occupy the time of this society in a discussion of the methods which have been practiced by ancient peoples—the Egyptians, the Hebrews, the early Greeks and Romans—nor will I pause to discuss the practices of the various barbarous and savage peoples of our own day. Suffice it merely to say that these methods which appeal to the emotions and to the superstition inherent in man's nature are not debarred by civilization or by supposed scientific enlightenment. The civilization of Vienna and of Paris in the eighteenth century did not forbid the introduction of mesmerism, nor did the exalted position attained by French physicians prevent the introduction, at a later period, of metallothrapy, nor indeed did the supposed scientific advances of our own day make impossible the introduction of the Bergeon treatment of phthisis by the injection into the rectum of sulphuretted hydrogen, nor prevent the neurologists from hanging their cases of locomotor ataxia. How these methods were heralded throughout the world and how they were practiced in every hospital, in every city, village, town, and hamlet, many of my hearers will be able to recall. Should we be surprised, therefore, if the medical profession itself be

subject to psychic epidemics of this nature, that the lay community should manifest the same symptoms in an even greater degree? Of this the innumerable faith cures, of which Dowieism and Eddyism are the most glaring examples, are the most indisputable and unpleasant proofs. We may forgive the ignorant when they seek the sacred shrines, the sacred springs and sacred relics, but what shall we say of those who possess an average of modern education and intelligence? Surely the inference is justified that these epidemics, which spread from time to time in great waves over great masses of humanity, are in their nature psychopathic. Indeed, when one reads the claims that are made, one is led to doubt the sanity of his neighbors, and perhaps it is not strange that the medical profession itself should also have become infected by the wave of mystic medicine recrudescing and now spreading over the civilized world. Medical men in high station have begun saying strange things, talking in a strange language, and doing still stranger acts. The time demands that the profession should again halt, that it should critically determine the facts and purge itself of error in order that at least some semblance of sanity may be preserved. This is an age incontrovertibly of fads, an age when the unessential, the intangible, the weird and mystic are pursued, when high-sounding words and phrases take the place of ideas, when metaphysical vaporings replace scientific observation and triv-

¹Read before the Philadelphia County Medical Society, March 25, 1908.

ial nothings the solid truth, when wretched commonplaces inspire admiration, when worn-out platitudes become strokes of genius, and when the imbecilities of hysteria become the final word of wisdom and of morals.

I do not intend to consume the time of this society by a discussion of the various forms of faith cure, of Christian science, Christology, and what not, least of all will I insult your intelligence by a consideration of that contemptible hybrid which has so recently emanated from Boston. Time can be better served by a consideration of the things that can be actually done by us as physicians for the relief of patients with nervous symptoms.

In a certain sense psychic means of treatment have been practiced by physicians of all ages and are practiced by the physicians of our own day, legitimately and properly. In other words, we all employ suggestion consciously and unconsciously in our daily contact with our patients. That suggestion powerfully affects the progress of a case for good or ill every experienced practitioner will admit. As an adjuvant to treatment it aids in an unmistakable manner in bringing about recovery, and even in incurable cases it may assist materially in keeping the patient comfortable. It may diminish the necessity for the administration of drugs, or it may enable us to give placebos in the place of the latter. Without stooping to any dishonest procedure, striking results can be frequently achieved by simple and perfectly proper means, but it is rarely that physicians can rely upon suggestion alone. It is hardly necessary to point out how the belief in eventual recovery affects the patient's general condition and nutrition. Other things being equal, the man who feels sure of getting well eats better and sleeps better. The very action of the heart is promoted by this hopeful and contented attitude of mind. Compare such a condition with that of a patient who is tormented by doubt and fear, or in whose mind the conviction has become settled that he is stricken with a serious or possibly fatal malady. Instead of coöperating with the physician in a

whole-hearted manner, he looks upon the treatment and its various details with doubt and suspicion. That he takes less food, that he digests it less well, that his sleep is more disturbed, that he feels his pains more acutely, that his various symptoms present themselves to him in a grossly exaggerated and distorted form, need hardly be pointed out. Every physician knows how smoothly the ordinary self-limited and curable affections progress when the patient has confidence in his medical adviser; every physician knows not only this fact, but is even aware of the effect of each separate visit upon his patient. Irrespective of the instructions given to the nurse, or of the modifications in the details of treatment resulting from the observation of conditions present, each visit has a distinctly tonic and bracing effect upon the patient. The nurse, too, acts no inconsiderable part. By the way in which she attends to her duties, by her general demeanor and conduct, even by such trivialities as the raising or lowering of the curtains, will she convey indirectly to the patient suggestions for good or for ill. Many nervous patients are intensely susceptible to such indirect suggestion; others yield more or less readily to such methods as retraining, reëducation, mental exercise, mental gymnastics, and other methods to be mentioned. It is perfectly proper for us therefore to analyze the various psychic methods that may be legitimately employed in the treatment of our patients. These resolve themselves into, first, general methods, and secondly, special methods.

GENERAL METHODS: MENTAL REST, MENTAL EXERCISE.

Under general methods we have two procedures, mental rest and mental exercise. Every one knows to how great an extent fatigue enters into the production of the mental symptoms met with in the functional neuroses, and rest absolute or partial becomes at once a factor of potent value in the treatment. I will not attempt to discuss this almost self-evident proposition, as the time allotted is too short for an extended consideration. Mental exercise is

one of us has made use of the placebo, and no one would question either the propriety of its use or its efficacy. Every one will admit the advantage of bringing about sleep by a capsule of starch or by a dose of boric acid. More than one of us can bear witness to the efficacy of a hypodermic of water. Similarly a special procedure may be instituted, other than one which simulates the giving of drugs—that is, a placebo may not be medicinal only, it may consist of some mechanical, physical, or mystic method. Such physical methods as electricity, magnetism, and many forms of baths, of massage, and manipulation may be properly employed as placebos. Indeed, there can be no doubt that many of the results, especially the rapid cures which occasionally follow the employment of such measures, are due to suggestion. Suggestion also plays a rôle in the treatment of special organs—*e.g.*, of the eyes and of the nose and throat, and in such measures as the washing out of the stomach, the use of the high enema, the minor gynecological procedures, and many surgical operations. Here, however, a word of caution is necessary. Local forms of treatment should in neuropathic subjects if possible be avoided, because such treatment may and frequently does give rise to new obsessions, to new beliefs in disease of this or that structure, to an obsession of the necessity for constant medical interference or frequently repeated surgical operations. Of the truth of this statement every practitioner can bear witness.

In employing the placebo, whether it be medicinal or physical, we should bear in mind one important point, namely, the intellectual and social status of the patient. The method should always be one which appeals to the understanding of the patient in question, and should always be such as to excite the belief on the part of the patient in its efficacy. Here, again, if the suspicion be aroused in the patient that he is being deceived, the influence of the physician is lost. It is further most important in employing placebos to ward off all possible opposing autosuggestions on the part of the patient as to the effect produced by

the remedy. A capsule of starch administered to a patient at night may produce sleep, but the patient may complain bitterly the next morning of headache, may have nausea and vomiting, and be in many other ways distressed—all of which he will attribute to the potent drug which the doctor prescribed. The placebo should of course be given with the suggestion that it will not only produce sleep, but that the sleep will be refreshing, that the patient will awaken in the morning buoyant and happy and ready for his work.

HYPNOTISM.

We have next to consider suggestion under hypnosis. Some writers upon hypnotism divide the therapeutic effects of hypnotism into the effects of hypnotism pure and simple and to those of the suggestions made under the hypnotic state. I have repeatedly stated my position upon the subject of hypnotism, and time prevents its detailed consideration this evening. Suffice it to say that the state of mesmerism or of hypnotism, as it has been termed since the days of Braid, is nothing more than a state of hysteria artificially induced. I will not further discuss the facts upon which this opinion is based than to say that the phenomena presented by hypnotism are, first, indistinguishable from those met with in hysteria, and, secondly, that they are beyond all doubt pathological. The sensory phenomena are always those of impairment or loss, and this abolition of sensation is indistinguishable from the hypesthesia or anesthesia of hysteria. It may be as in hysteria general or limited in distribution, and as in hysteria it may involve the special senses. The motor phenomena consist of paralysis, tonic spasm, contractures, or convulsions, as the case may be. These again are indistinguishable from those met with in hysteria. Finally, if in consequence of a suggestion a palsy occur in a hypnotic subject, the paralyzed limb also becomes anesthetic, just as in an ordinary hysterical paralysis. In other words, as in hysteria, the limb becomes elided from the field of consciousness as a whole; both its motor and its sensory at-

tributes are lost. A more convincing or significant fact it would be difficult to imagine.

The benefits to be derived merely from the induction of the hypnotic state—that is, the hypnosis without suggestion—are most difficult to comprehend. What good can it do an individual to induce in him hysteria? However, it has been upon the supposed beneficial effect of suggestions made during hypnosis that the greatest stress has been laid. Time again forbids the detailed discussion of this question, but it is a matter of common experience that as fast as one symptom or group of symptoms is suppressed under hypnotism other symptoms make their appearance. When we pause to examine the claims made by the advocates of hypnotism, we are impressed by the unreality and unsubstantiality of the cures. Hypnotism is believed by its advocates not only to be of value in functional nervous diseases, but also in some that are organic or at least possess a fixed pathology. Thus Bernheim, Fontan, Grossman, Lloyd Tuckey, and others claim good results in focal brain lesions, in tabes, and in myelitis. We have good reason to doubt the accuracy of the diagnoses when we read of cures made in lead palsies, of brain abscess, of hemorrhoids, of arthritis deformans, albuminuria, scurvy, periostitis, chronic articular rheumatism, carcinoma, postdiphtheric palsy, paralysis agitans, paranoia, osteomyelitis, and trichinosis! Indeed, it would be somewhat difficult to name a disease in which the advocates of hypnotism had not at one time or other claimed a cure.

My own position in regard to hypnotism is briefly this: first, hypnotism is nothing more than hysteria artificially induced; secondly, the impressions made by suggestion under hypnotism are evanescent in their character; thirdly, there is great tendency to the recurrence or to the production of symptoms. Further, hypnotism means not only the induction of a condition in itself pathological, and one which when repeated with sufficient frequency may lead to the induction of more or less persistent hysteria, but which the experience of the profession the world over since the days of

Mesmer has proven to yield no results of tangible value.

THE PSYCHOANALYSIS OR CATHARSIS OF BREUER AND FREUD.

It is next in order for us to examine the method of psychoanalysis or catharsis devised by Breuer and Freud. This method claims our special attention because it is the newest of the psychic procedures, and because during the last two or three years it has attracted attention abroad, and more lately in our own country.

The method of Breuer and Freud, or Freud's method as it is now more commonly known, was first described in the book by Breuer and Freud entitled "*Studien ueber Hysterie*," and published in 1895. The method was in reality devised by Breuer, who some ten years previously had by this means cured a hysterical patient and had at the same time gained an insight into the pathogenesis of the symptoms of the latter. The authors stated that they found to their greatest astonishment that the individual symptoms of hysteria immediately and permanently disappeared whenever they were successful in fully arousing in the patient the memory of the event which was causal to the development of the symptom, together with the accompanying emotion, if added to this the patient gave the fullest possible description of this event and gave verbal expression to the emotion. Notwithstanding the form in which it is stated, this observation, which embodies a certain element of truth, does not by any means embody a new idea. It is a common experience with physicians, not only with neurologists but with practitioners in general, that if they can induce the patient to talk freely concerning his symptoms, especially dwelling upon the origin of the latter and the causes which led to them, the patient's mind is often relieved, the symptoms at once losing in importance and often fading away. There is an emotional relief akin to that which a child experiences when confessing to its mother some act of disobedience, some peccadillo, or other trivial misconduct, the recollection of which is burdening its mind.

likewise a factor of supreme importance and of supreme value. Every one knows the health-producing power of work, the health-producing power of occupation: the man whose mind is actively occupied ceases, other things being equal, to be introspective; his mind assumes an objective attitude; he gives himself up to things other than himself, and his many symptoms recede in direct proportion. Special methods of mental exercise are, of course, to be applied to special cases and to strengthen special faculties. Every one knows the great value of retraining such as is instituted by application to this or that occupation. Further, special faculties may in themselves be stimulated, as the will and also the faculty of inhibition; this, indeed, may be accomplished by relatively simple means. Most efficacious are methods coupled with physical exercises: for instance, the patient who presents all the features of the neuropathic constitution—that is, who is the victim of generalized or special forms of fear—who is oppressed by indecision, by lack of will-power, and by impaired inhibition or self-control, may be very greatly benefited by exercises of the mind combined with exercises of the body; thus, simple gymnastic movements not requiring a great expenditure of strength, but which require the attention of the mind to be fixed upon them, and which require a certain degree of exercise of the will in order that they may be carried out properly and for the required number of times, are of inestimable value. A relatively simple movement which is not difficult to execute is soon readily performed; then a more difficult or more complex exercise should be undertaken, and the patient gains in proportion as he persists in carrying out the exercise correctly in all of its details and in proper sequence. As he progresses he gains confidence in himself; he also gains in self-control. An exercise that is complex demands that the patient should prevent himself from making untoward and unrequired movements or gestures. He is at one and the same time exercising his will and also inhibiting his movements. Will and inhibition are strengthened by the one pro-

cedure. Proper forms of exercise, combined of course with rest, full feeding, and simple hygienic methods, yield in a large percentage of neuropathic patients admirable results. In proportion as the patient gains in confidence and in self-control his fears diminish, as does also his habit of indecision.

How the principle of mental retraining can be applied in having the patient read aloud, declaim, copy, write at dictation, or by having him undertake a serious course of study, an educational occupation, or special mental gymnastics, as the case may be, time will not permit us to discuss. Suffice it to say that the plan adopted must depend upon the needs of the patient and the good sense of the physician. I will at once pass to a consideration of the special psychic methods.

SPECIAL METHODS.

Among the special methods we have, first, normal suggestion—that is, suggestion in the waking state; secondly, suggestion under hypnosis; thirdly, the method of psychoanalysis or catharsis devised by Breuer and Freud some years ago; and fourthly, the method of exciting the emotions by an appeal to the religious feeling and the superstition of the patient.

NORMAL SUGGESTION.

Normal suggestion separates itself into indirect and direct suggestion. The indirect suggestion is the form which is habitually employed by physicians, though such employment is usually unintentional and even unconscious, the physician himself being unaware of what he is doing. In it the patient also is usually unaware that suggestion in any form is being made, but it is none the less potent. I have already outlined the mode of action of the indirect suggestion and cannot pause to further discuss it.

Direct suggestion consists in the frank statement to the patient that he is improving or that he will get well. The manner in which the direct suggestion should be made depends largely upon the mental make-up of the patient. To patients who are educated, if the facts permit, it is a

good plan for the physician to give a brief explanation of the symptoms present, couching his language in the simplest and most elementary terms. Many patients are in such cases completely satisfied. With other persons the explanation must of necessity be avoided—first, because of the nature of the symptoms, and secondly, because a discussion of the viscera or of other structures of the body arouses mental pictures that are at once disagreeable and alarming. Direct suggestion is, in my experience, most efficacious when the statement is made moderately. The patient readily builds upon and adds to the suggestion thus thrown out. An overstatement, or one made with unnecessary emphasis or exaggeration, may fail of effect, while a moderate statement may prove of enormous and convincing force. Care, tact, and judgment must be used in the employment of direct suggestion, for it is not without its dangers. The patient may, for instance, be led to expect a change of symptoms before a sufficient time has elapsed for a change to ensue. Under these circumstances the influence of the physician and the confidence reposed in him by the patient may be seriously shaken. Again, if the suggestion be made in so blatant and unreserved a manner as to excite the suspicion of the patient, the result may be equally disastrous. We should always avoid leading the patient to suspect that he is being "jollied," for in such case he will soon be convinced that he is being fooled. Properly employed, direct suggestion is of the utmost value. As a rule it is most efficacious. Among children, or among persons who are mentally immature or uneducated, the statements may be made with more authority. Indeed, at times an actual command, especially in the case of children, is of value, the child being told that he must not do such and such a thing again. Care should be taken, however, even here, for if the symptom persist notwithstanding, the patient's confidence in the physician may be lost. An immediate disappearance of symptoms rarely follows a direct suggestion, and the suggestion had therefore best be made so as to include some idea of

time. The patient should be made to feel better by assuring him that his future is bright and that his symptoms are bound to disappear. In many cases a full and complete explanation to the patient, if he be intelligent, is followed by the happiest of results. The unessential character of the symptoms should be dwelt upon; it should be pointed out that they are not dependent upon organic disease and are purely functional in character. Not infrequently this satisfies the patient, and gradually his various troubles become submerged in his subconsciousness.

A suggestion may not only be made by word of mouth; it may also be written, and in this form it sometimes acts powerfully. Every physician who has much to do with nervous patients is obliged to write letters, and he soon learns that his letters are capable of doing both good and harm. A little judgment and care in writing letters, in making conservative statements, statements that seem reasonable and have within them the intrinsic probability of truth, take powerful hold of the patient's mind. They become engrafted in his thoughts, they favor the conviction of returning health, and at times distinctly ward off the recurrence of symptoms. I have, for instance, a patient who is a physician and living in a distant city, who carries one of my letters in his pocket; and when fatigued, nervous, and upset by a day of unusual strain, or worried by a desperate case, he takes this letter from his pocket, reads and rereads it, and is quieted, comforted; he tells me that it helps him wonderfully. No rule can be given for the way in which we should talk to our patients or in the way we should write to them. This depends upon the innate common sense of the doctor himself.

Under direct suggestion we should consider also those suggestions which should be made to persons in whom either the degree of intelligence or the degree of education is limited, and to whom a rational explanation of the symptoms does not suffice. In such patients, as well as in those of higher mental make-up, it may be necessary to take advantage of a common human attribute, namely, credulity. Every

So it is with the adult, as not only physicians but lay persons equally know. When a patient has unloaded his mind fully in regard to some real or fancied cause of worry, great relief is experienced. There is as it were a relief of tension, a reestablishment of the emotional equilibrium, and a consequent sense of comfort and relief. Patients themselves know this, nervous patients in particular, and it is for this reason that they insist on describing their troubles in detail, often with such minuteness and with such wearisome repetition as to seriously tax not only the time but the endurance of the doctor. They want to tell their story, they want to tell it fully and completely without let or hindrance, and so anxious are they not to omit anything that it is a common experience to have them come to our offices with long series of notes mostly written upon small pieces of paper, in order that no point, no matter how minute, should be omitted.

The relief which patients experience by a full account of their symptoms, and the inevitable concomitant emotional discharge, is seen, in a more marked degree of course, and yet typically, in the making of confessions; at times the demand for relief under these circumstances is so great and so insistent that the sufferer voluntarily makes statements which he knows may lead to disgrace, imprisonment, and at times even to death.

Freud describes his method in detail somewhat as follows:¹

Originally the cathartic method, as it was at first termed, presupposed that the patient was capable of being hypnotized, and was based upon the expansion of consciousness which ensues under hypnosis. Freud's endeavor was to set aside the patient's symptoms, and he attained this end in so far as he placed the patient back into the psychic state in which the symptoms first made their appearance. There appeared under these circumstances in the hypnotized patient, memories, thoughts, and impulses which had long disappeared from

his normal consciousness. When the patient communicated these, his soul happenings, to his physician, and did so with intense emotional reaction, the symptom was conquered and its recurrence prevented. This result Breuer and Freud explained as follows: The symptom had existed as a substitute or in place of another past experience which had been suppressed, and the recollection of which had become subconscious—that is, it was a conversion of the original memory of an act and its associated emotion into a pathological symptom or obsession. The therapeutic efficacy of their procedure Breuer and Freud explained as the catharsis of the repressed, "locked-up" emotion which had been attached to or associated with the suppressed psychic experience. This explanation, however, Freud remarks, cannot always be so simple, for a given symptom owes its origin in most cases not to one but to a series of past impressions.

The cathartic method, in contrast to all other methods of psychotherapy, is characterized by the fact that its therapeutic efficacy is not due to suggestion. Indeed, it is the expectation of this method that the symptoms disappear when the attempt is successful to divert the psychic processes into another course than that which they pursued in the production of the symptom.

The change which Freud made in the cathartic method of Breuer was a change of technique. This led to new results and to new conceptions, not, however, opposed to those of the former method. The cathartic method had dispensed with the factor of suggestion, and Freud's next step was to dispense with hypnotism. He treats his patients at present as follows: The patient lies on her back upon a couch, whilst he himself sits upon a chair back of her and out of her line of vision. He no longer requests the patient to close her eyes as formerly, and avoids every touch or procedure such as would be in keeping with hypnosis. Such a séance has the character of a conversation between two persons equally awake, one of whom, the patient, is spared every possible muscular effort and every diverting sensory impres-

¹Abstract translation of Freud's communication in Loewenfeld's work on "Die Psychischen Zwangsercheinungen," 1904, pages 546 to 551.

sion such as might disturb her in her concentration on her internal psychic processes. Inasmuch as the success of a hypnotic procedure depends upon the skill of the physician and the willingness of the patient, and inasmuch as a large number of neurotic persons cannot be hypnotized by any possible procedure, doing away with hypnotism allows Freud's method to be applied to an unlimited number of patients. On the other hand, the expansion of consciousness under hypnosis in the original method was a distinct advantage, for it gave to the physician the very psychic material of memories and conceptions required, and with the aid of which he brought about the change in the symptoms. However, Freud thinks that if his present method suffers from a corresponding disadvantage there cannot on the other hand be any possibility of suggestion. Further, Freud believes that he finds a counterbalancing advantage in the involuntary thoughts to which under the present method the patient gives expression—thoughts involuntary and almost always disturbing, which the patient under ordinary circumstances suppresses, and which usually interrupt a connected and designed account of the past history. In order to take advantage of these involuntary ideas or conceptions of the patient, Freud requests the latter to allow herself to drift in her communication, just as one would drift in a conversation in which one passes in turn to the most varied subjects. He impresses the patient before she enters into the detailed account of her history to tell everything that comes into her head, whether she thinks it important or unimportant, whether it seems relevant or senseless. The patient is especially requested not to suppress any thought or idea because this idea happens to be shameful or painful.

In his efforts to collect or unravel suppressed memories Freud made the following observation: In the very beginning of the account given by the patient, lapses of memory become apparent. These may have to do with every-day occurrences which have been forgotten or to relations of time or of cause which have become disturbed,

so that results are obtained which cannot be understood. Freud claims that no neurotic history can be elicited which does not reveal amnesias of some form or other. If the patient be urged to fill up these lapses of memory by an increased effort of attention, it is noted that the ideas which now occur are repressed with every effort, until finally, if the memory really appears, she experiences a marked sense of discomfort. From this observation Freud concludes that the lapses or lacunæ of memory are the result of a mental action which he terms suppression (*Verdraengung*), and as the motive of this suppression he recognizes feelings of aversion or dislike. The psychic forces which have brought about this suppression he believes he recognizes in the resistance which is offered to the memory-reproduction.

The factor of this resistance has become one of the fundamental features of his theory. He regards the ideas which appear under these circumstances as derivatives of the suppressed psychic pictures; as transformations of the same, the direct result of the resistance offered to their reproduction. The greater the resistance, the more pronounced is this transformation. It is in this relation of these undesigned ideas to the suppressed memory that there is found the therapeutic indication of Freud's method. If we possess, he adds, a method which renders it possible to gain access from the involuntary ideas to the suppressed ones, from the transformations to the original ideas, we make previously undiscovered subconscious factors accessible to consciousness without resorting to hypnosis. Freud further claims, as is well known, that the patient's dreams furnish material which also opens up direct access to the subconscious life.

Freud in summing up the task presented by his psychoanalytic method states that the aim of the treatment is to remove the amnesia. As soon as all of the lacunæ of memory have been filled, all doubtful occurrences of the psychic life cleared up, the problem remains to make a continuation of the symptom impossible. All of the suppressed recollections are to be relieved

or are to be made retrogressive. It is the object of the method to make the subconscious accessible to the conscious. We must not, however, forget that in normal persons this can only be done approximately. We must be content with the practical cure of the patient, the reestablishment of his usefulness and power of enjoyment. Even in incomplete cure, in partial success, there is an important improvement in the general psychic condition; although the symptoms may persist in a lessened degree, they no longer characterize the patient as ill.

This therapeutic method, says Freud, is applicable to all of the symptom-groups of hysteria as well as to all of the obsessional neuroses. Its application is not, however, unlimited. The very nature of the method presupposes indications and contraindications both as regards the personality of the patient and as regards the nature of the symptoms. The most favorable cases are the chronic cases of the psychoneuroses, in which there are few paroxysmal symptoms or threatenings of outbursts—*i.e.*, cases of the obsessional neuroses, cases with imperative thoughts or with imperative actions, cases of hysteria in which phobias and aboulias play the principal rôle, and also all cases of somatic hysteria, *e.g.* anorexia nervosa, in which the immediate removal of the symptom is the main object of the physician. In cases of hysterical paroxysms we will be obliged to await the oncoming of a quiet interval; in all cases in which nervous exhaustion is the prominent feature, one would have to avoid a procedure which requires marked exertion on the part of the patient and which only yields results slowly.

On the part of the patient who may be treated with advantage by psychoanalysis, a number of conditions are requisite. First, the patient must be capable of normal psychic action. In states of confusion or melancholic depression nothing can be accomplished. Further, the method also presupposes a certain degree of natural intelligence and of ethical or moral development; in indifferent individuals lack of interest soon defeats the attempts to gain access to their past soul-life. Well-marked malformations

of character, genuine degeneration of the constitutional make-up, also offer an unconquerable difficulty to cure by this method. Further, age in the neighborhood of the fifth decade of life also results in conditions unfavorable to psychoanalysis. By the time the fifties are reached the mass of the accumulated psychic experiences is so great that it can no longer be compassed. The time required to reproduce the memories of the past becomes too long, and the capacity to make psychic processes retrogressive begins to fail.

Freud maintains that in spite of all these limitations the number of persons suitable for psychoanalysis is exceedingly large, and that our therapeutic powers are greatly increased by its means.

However, in considering Freud's claims, we must note the following important admission: He states that from one-half a year to three years is necessary for the successful treatment of a patient. He adds that up to the present time, in consequence of various and readily understood circumstances, he has only been in the position of applying his method to very difficult cases, persons whose symptoms had existed for many years, who had no ability to do anything, who had been disheartened by all previous treatment, and who had, as a last resort, submitted themselves to a new and much-questioned procedure. Freud adds that in cases with slight symptoms the duration of the treatment would probably be much shorter and that there would be a great gain in prophylaxis for the future.

Freud's method and theory are open to many serious criticisms. The first of these is offered by the peculiar view which he holds as to the origin of obsessions. Breuer in his first patient, the patient whose case originally suggested the method, fancied or perhaps did detect in the history a cause of self-reproach or blame which had led to her hysteria, and the unloading of or confession of which led to her prompt recovery. At any rate the studies made by his colleague Freud have led the latter to some very remarkable conclusions, conclusions to which comparatively few neurologists as yet have been able to subscribe. Freud believes that

the various obsessions, hysterical and otherwise, have their origin in some passionate sexual action or aggression of childhood. Obsessions are, he says, always reproaches changed or evolved from the suppression of the memory of reproaches having this sexual origin; in other words, that the memory of the sexual action itself, being repulsive or abhorrent, is suppressed, but the feeling associated with the memory persists in the mind and now associates itself with or attaches itself to some other memory or action, and that in this way arise the various obsessions. Others than myself have dwelt upon the glaring inconsistency of the sexual immaturity of children and the intrinsic biological improbability of this theory. Perhaps Freud has himself been impressed by this fact, for of late years it would appear that he has retreated to the age of puberty, attempting to save the situation, however, by saying that the memory of these sexual events is projected from puberty into the period of childhood.

As an instance illustrating the sexual evolution of obsessions, Freud records the following case:¹ A young girl was found to be suffering from obsessions. When she read in the newspaper an article on counterfeiters, there came to her mind the thought that she also had made counterfeit money. If she read of a murder by some unknown assassin, she would ask herself anxiously whether she herself had not committed the murder. The unreasonableness of these obsessional reproaches was quite evident to her, but for a time the sense of guilt became so overpowering that her judgment was stifled, and she accused herself to her relatives and to her physician of having been guilty of all these misdeeds. However, the patient having been submitted to a strict verbal examination, the source of her sense of guiltiness was finally elicited. It transpired that during a moment of awakened desire she had allowed herself to be misled to masturbation by a friend, and that she had subsequently practiced masturbation for many years with the full knowledge of the wrong of it, together with the strongest but

usually useless self-reproaches. An excess of masturbation after she had been at a ball had aroused her obsessional state to the level of a psychosis. Freud adds that the girl recovered after several months of treatment under strict supervision.

Loewenfeld, for whose opinion we should entertain profound respect, states that he is unable to substantiate Freud's statements, although he has for some time endeavored to awaken in his patients recollection of infantile sexual experiences. His attempts have, however, yielded no positive results. When he actually did uncover sexual experiences in the childhood years, he found that the memory had never been suppressed and that the separation between the memory of the act itself and the concomitant emotion had not and could not have taken place. Loewenfeld adds, however, that though the cases under his observation have not yielded the evidence of an infantile sexual origin of obsessional states, he regards it notwithstanding as probable that in a certain percentage of cases such an origin may exist, but he does not believe that this percentage can be considerable. He believes, as I do myself, that Freud greatly overestimates the rôle played by sexual factors. Further, it is extremely probable that Freud by his method *suggests* the memories of sexual occurrences to his patients; in other words, that he elicits from them a fictitious memory of sexual events in their childhood, of events that have never occurred. Indeed, Loewenfeld gives an instance of a patient of Freud who subsequently came into his (Loewenfeld's) hands.¹ The woman stated to him that the sexual events which she had related to Freud when under his treatment had really never occurred. She declared that the whole thing had been a piece of pure imagination.

It would indeed appear that the very conditions under which Freud practices his method are such as to bring about in the patient a state of actual or border-land autohypnosis. He places the patient, let us remember, upon her back, she closes her mind to every possible external impression, she

¹Quoted in Loewenfeld's "Psychischen Zwangsercheinungen," page 295.

¹Loewenfeld: "Sexualleben und Nervenleiden," 1899, page 195.

lies perfectly still, concentrates her mind upon her thoughts, and then in giving her account of her past experiences is expressly instructed to allow herself to drift at will, to tell everything, no matter what, that enters her mind. Finally, it is admitted that the process is very fatiguing. It may be doubted whether conditions more favorable to autohypnotic states could be devised, and the presumption is justified that there is but little credence to be based upon the sayings of a patient in this condition. It is extremely probable—indeed certain in cases of hysteria—that under such circumstances the patient will respond with alacrity and alertness to the slightest suggestion, inadvertent or unintentional though this may have been on the part of the physician. That confession of imaginary sins, especially sexual transgressions, should be made under these circumstances is not to be wondered at. The patient divines intuitively what is expected of her, and finally under the stress makes the statement thus suggested, though she does so, be it noted, reluctantly, and it is upon this reluctance that the whole theory of Freud's method is based. Reluctance, indeed! What woman is not reluctant in hypnosis or out of hypnosis to admit sexual vagaries, least of all those which she never committed? It is all too probable, I fear, that the lacunæ of memory are filled with fictitious happenings.

Next, there is the glaring absurdity of sexual aggressions in childhood of which I have already spoken. Next is the all-important fact that Freud's explanation leaves out of consideration all the obsessions which obviously and clearly have a non-sexual origin. What shall we say, for instance, of the obsessions present in the cases of the traumatic neuroses, which in this country may be fairly said to greatly outnumber all others? What shall we say as to cases of the special fears the origin of which can be clearly traced to occurrences non-sexual in character? Or as to the indecisions and aboulias which can so often be traced to exhaustion and inherited neuropathy? What shall we say of the obsessional states which make their appearance in middle life or toward old age? By what

possibility can these be ascribed to infantile sexual aggressions?

The method of Freud obviously offers doubtful advantages. The time required for a cure—from six months to three years—is most discouraging, especially when we bear in mind that each séance requires one or more hours, and that the séances must be frequently repeated, often daily, if success is to be achieved. As far as I have been able to learn, a measure of success such as would justify so great an expenditure of time has not followed. I need not, I am sure, point out the one remaining objectionable feature of Freud's method, and that is the questioning of patients with regard to their sexual lives. Such questioning must be persistent and insistent, and, aside from the doubtful value of the results obtained, must be painful and offensive alike both to the physician and to the patient. Certainly, in persons of high social and moral make-up, such a séance, if at all possible, must be intensely disagreeable, and if the truth be known the rehearsal of sexual details, repulsive and revolting, probably does harm and not good.

RELIGIOUS AND SUPERSTITIOUS PSYCHOTHERAPY.

I have little to say regarding the fourth and last special method of psychotherapy, namely, the method of exciting the emotions of the patient by an appeal to his religious feeling and superstition. That such a method yields results goes, of course, without saying. Cure by prayer, by religious exaltation and excitement, occurs just as does cure by visits paid to shrines, sacred springs, and other holy places. The method does not differ essentially from the Pythonism of the Greeks, the incantations practiced by the Egyptians or by the medicine men of the various savage races of our own day. The method is hardly a legitimate one for physicians, and it has in reality no place in scientific therapeutics.

SUMMARY.

In closing I may perhaps anticipate the question which may be asked, In how far shall we apply psychotherapeutic methods? We

should always bear in mind that the symptoms that our patients present have a physical basis, and especially is this true of the functional nervous diseases. States of exhaustion play a fundamental rôle in all of them, and Janet has pointed out that when the general level of the mental tone is raised obsessions disappear. It would seem, then, that attention to the physical condition of the patient, the bringing up of his health to the highest possible level, must be the first object of our treatment. In other words, simple physiological procedures, rest, full feeding, gentle exercise, massage, bathing, and like measures should be instituted in every case. In obsessional states there is essentially a neurasthenia, or, to use the more fashionable latter-day term, psychasthenia; it is the underlying asthenia which first demands our attention. Rest and physiological measures can be applied according to the character of the case, from partial

methods up to a full rest cure. Added to these conditions we should institute such simple psychotherapeutic measures as mental rest, especially such as is secured by the isolation of the patient; secondly, the retraining of the patient; later on special mental exercises or mental gymnastics, if necessary. During all of the time judicious use should be made of normal suggestion, both direct and indirect. Under direct suggestion we should include such an explanation to the patient of his condition as may be adequate and tactful, pointing out that his symptoms are functional and that they will in time disappear. That normal suggestion acts powerfully when the level of the general health is improving goes without saying. Suggestion under hypnotism is in my judgment rarely if ever justified. Psychoanalysis will probably, for reasons already given, never find a permanent place in our therapeutics.

TREATMENT OF THE ENLARGEMENT OF THE PROSTATE.¹

BY DR. WILHELM KARO, BERLIN.

I deeply appreciate the honor you have done me by asking me to speak before you this evening. You, of course, know that the last twenty or thirty years have brought about great changes in the treatment of prostatic enlargement. While Thompson in the last edition of his "Diseases of the Urinary Organs" thought that a patient who had led a catheter life for one or two years could not possibly recover the power of emptying his bladder even though the obstruction to the free passage of the stream were completely removed, and Guyon in "*Leçons cliniques sur les affections chirurgicales de la vessie et de la prostate*" taught that because of the anatomical and histological structure of these organs radical treatment would be impossible, radical operation is now performed daily. Indeed, the surgical procedure is so easily carried out and its results are so often successful that there is a tendency to go to the other extreme, and many cases are operated upon that

might be relieved by simpler and safer methods. It is my aim to-night to show you how much can be accomplished by conservative treatment, my conclusions being based on nine years' experience in Casper's clinic.

It is generally accepted as true that many men with enlarged prostates are totally without symptoms. Hence it is unwise to operate on a man simply because he has an enlarged prostate—as unwise as it would be for the gynecologist to extirpate the uterus each time he found it retroflexed. The line of treatment lies in protecting the patient against every influence which produces prostatic congestion. Hence exposure to cold, wet feet, alcoholic excesses, protracted sitting; and prolonged retention of the urine must be avoided. A light diet, attention to digestion, avoidance of spices, and regular exercises should be enjoined. Apart from these prophylactic measures treatment may be instituted either for the relief of symptoms or for the purpose of lessening the growth of the prostate. Many prostatics remain comfortable for years without any

¹Read before the Anglo-American Medical Association of Berlin, Nov. 2, 1907.

special treatment other than that incident to a careful regimen in accordance with the principles above outlined. If occasional attacks of severe strangury, pain, and difficult micturition occur, hot sitz baths and hot applications to the hypogastric region and perineum, together with the use of morphine or heroin suppositories, or an injection containing these drugs, with antipyrin or pyramidon, may be employed with advantage. These measures, in association with confinement of the patient to bed or to his room, usually overcome the congestive attacks promptly.

The principal symptomatic treatment is by means of catheterization. For chronic or acute complete retention the catheter is always indicated, whilst it is our chief means of help for incomplete retention. It is particularly in the case of enlarged prostate that catheterization is likely to be difficult. There is possibly no medical procedure more satisfactory both to the practitioner and his patient than a skilfully executed catheterization. The proper conduct of this procedure is, however, so important that I shall enter more fully into its technique.

The essential preliminary condition is one of complete asepsis, and the physician should prepare himself as carefully for catheterization as he would for laparotomy, since infection having once entered the bladder there is no absolute means of further preventing its upward extension into the vital organs. The urethra should be anesthetized. The simplest method of accomplishing this is the injection by means of the usual male syringe of 20 cubic centimeters of a two-per-cent cocaine or novocaine solution. The more slowly this injection is made the more readily will it penetrate into the prostatic portion. Following the injection there should be a wait of at least ten minutes before proceeding to use the catheter. The addition of a few drops of adrenalin to the cocaine solution is advisable, since it causes an anemia of the mucous membrane and so facilitates the introduction of the instrument. The success or failure of catheterization depends mainly upon the choice of the right instrument. Even in Berlin this fact

is not universally recognized, since we had a few months ago a patient of seventy-eight brought into Casper's clinic suffering from complete retention, but still more from the misdirected efforts of the specialist, who assuming that this man was afflicted with stricture had attempted to empty the bladder by Lefort's method. Unfortunately, the filiform bougie remained in the bladder as a foreign body. In the clinic a large metallic catheter was passed without difficulty. The extraction of the bougie was readily accomplished through the medium of a forceps and the operating cystoscope. This example serves well to illustrate the importance of determining the cause of retention before proceeding to use instruments.

I recommend as the most suitable instrument for retention due to prostatic enlargement the silk-web catheter with Mercier's curve. Care should be taken in introducing this instrument to have the beak pointing upward, that it may glide along the upper wall of the urethra. These flattened catheters which I exhibit are distinctly advantageous, since they enable you readily to control the position of the beak. One with some experience nearly always succeeds in passing the Mercier catheter. This is not the case with a soft-rubber instrument, which in itself may negate the advantages of the most experienced touch. Therefore the latter instrument should not be employed. If careful and not unduly protracted efforts with the Mercier catheter result in failure, a metal catheter should be employed, one of large caliber, free curve, and a long beak. A metal catheter should be slowly and cautiously passed; force should never be employed, but the instrument should rather be made to grope its way into the bladder. The mastership in the use of the metal instrument can only be obtained by practice. A rule which should be borne in mind is that the employment of metal catheters which have their beaks similar to those of stone sounds is absolutely inadmissible. With such short-beaked instruments there is great danger of perforating the prostate instead of passing over it. In cases in which false passages have al-

ready been made and evacuation of the bladder again proves to be necessary, the surgeon failing to get entrance with a large metallic catheter should at once puncture the bladder with a thin cannula, thus averting immediate danger. This procedure is perfectly free from danger even when frequently repeated, and is certainly less harmful than attempts at catheterizing when there are false passages. Not infrequently these punctures must be repeated for days in succession, whilst the urethra remains untouched. In the meantime the false passage heals and catheterization can be successfully accomplished. Only in cases characterized by profuse bleeding from the bladder will punctures be unsuccessful, as the urine mixed with blood is too thick to pass through the cannula. These cases call for suprapubic section. As for the indications for catheterization, the first and obvious one is complete retention. If the usual means for the relief of acute retention, such as hot baths, hot applications, and injections of morphine, produce no results the bladder must be emptied by the use of a catheter.

In chronic retention, also, the catheter cannot be dispensed with, since the relief afforded by dribbling is not sufficient. Cases of incomplete retention characterized by a large amount of residual urine also call for a catheter. When the passage of an instrument is difficult or very painful a permanent catheter is indicated. If, however, the bladder is uninfected and the urine is clear, I should advise against the employment of a permanent catheter save in the most urgent cases, since it nearly always causes cystitis. Formerly patients who wore permanent catheters were confined to bed, and this method of treatment was not considered advisable for more than a few weeks at most, but Casper has introduced a method of treatment by permanent catheterization which has proven to be very valuable in a number of cases. The catheter is left in place for months, or indefinitely, for that matter. The patients are allowed to walk about and follow their usual avocations. The bladder must be irrigated once or twice a day, and the catheter must be changed every

one or two months. At first a suppurative urethritis is produced, but it soon heals and the urethra becomes dry, forming as it were an artificial fistulous canal. If the patient experiences much pain and difficulty he should at first be kept in bed and should be given morphine. This treatment possesses the great advantage of not confining patients to bed, and thus does away with the possibility of hypostatic pulmonary congestion, so prone to develop in old, decrepit persons who are bedridden. These patients are freed from strangury and pain caused by each passage of the instrument, and urinate easily every two or three hours by the simple process of removing the cork which closes the catheter.

For the relief of cases of enlarged prostate where the chief symptom is pain and tenesmus, with little or no residual urine, I believe the best measure is double vasectomy. As an indication for this operation the size of the prostate is of no importance, for the procedure is not in the faintest degree intended to make the prostate smaller, but simply to relieve discomforting symptoms. The result of this slight operation is quite astonishing at times. Patients who before operation had to urinate every thirty to fifty minutes can now retain the urine from six to eight hours. It must be said that the result is uncertain, the benefit not coming at times for weeks or months after the operation; at other times never appearing. On the other hand, such a simple and harmless procedure is quite applicable to patients already much weakened. In any event it is our duty to perform vasectomy before proposing a more radical operation. A further advantage lies in the fact that through the vasectomy we protect the patient from epididymitis, which we know by experience to be a troublesome complication of frequently repeated catheterization.

When palliative treatment and vasectomy fail a radical operation is indicated, meaning by this expression either prostatectomy or Bottini's operation. These procedures are to be welcomed as decided advances in prostatic hypertrophy inasmuch as they afford relief in a class of cases not otherwise

amenable to treatment. They are not without danger, and therefore should not be employed indiscriminately nor undertaken lightly, being reserved for those cases in which milder measures prove futile.

When catheterization fails or has to be frequently repeated, owing to smallness of the bladder produced by thick, edematous walls, when severe cystitis is present or frequent attacks of retention occur, then prostatectomy must be considered.

As to the method of operation this must depend upon each individual case. Further experience will doubtless result in better knowledge as to the exact indications and should dictate a choice between the two recognized procedures, namely, the suprapubic and perineal operations. At present the weight of evidence seems to be in favor of the suprapubic method in the majority of cases. The functional results are better, the complications less frequent, and a decided decrease in mortality has occurred as improvements in operative technique have taken place. The technique of the modern suprapubic prostatectomy is as follows: Before commencing operation the bladder is thoroughly washed out, and then distended with an antiseptic solution. It is then opened suprapubically, care being taken to push the peritoneum out of the way. The forefinger is introduced into the bladder, and the mucous membrane covering the prostate is incised. The forefinger of the other hand is next introduced into the rectum to render the prostate prominent in the bladder and keep it steady, while the finger in the bladder enucleates the prostate out of the enveloping sheath. After the enucleation has been completed the prostate is grasped by strong-toothed forceps and withdrawn from the bladder through the suprapubic wound. The ejaculatory ducts are sometimes torn across or drawn out of the prostate; in most cases they remain attached to the portion of the prostatic urethra left behind. Any tendency to hemorrhage is checked by irrigation with hot boracic lotion and by pressing the opposing surfaces of the prostatic cavity between the finger in the rectum and that in the bladder.

Freyer has, according to his last published communication, performed 432 such operations with a mortality of about 7 per cent. In Casper's clinic we have repeatedly performed the operation with good results, and it seems to be a fairly easy operation. It must, however, be borne in mind that the after-care demands especial care and attention.

In regard to the perineal method we have operated in the way recommended by Young, but because of our great success with the suprapubic method we have adhered strictly to the latter. As to Bottini's operation, which consists in incision by means of the galvanocautery, it is only indicated in cases with chronic retention of urine. Acute retention of urine never requires operative interference.

The danger of this operation lies chiefly in hemorrhage which occurs not at the time of operation but after the sloughs separate, and at a time when the bleeding cannot be controlled excepting by exposing its seat by a major operative procedure. The last patient on whom we operated by the Bottini method died of a severe hemorrhage in the fifth week after the operation. Sepsis is also a frequent complication of the Bottini operation, and one especially to be feared in cases of severe purulent cystitis. In such cases it is imperative that the bladder should be previously cleansed by continuous catheterization and irrigations of silver nitrate. If the cystitis cannot be improved by this means the operation should not be performed.

Besides the complications of the Bottini operation, there is the permanent objection that its results are less satisfactory than those obtained by prostatectomy. These results are both uncertain and transitory. Relief may follow for a time and the patient be classed as cured, and this state may last for weeks or months, but it is rarely permanent. Sooner or later in the large majority of cases the symptoms return. The class of patients, therefore, to whom I would suggest the Bottini operation is extremely limited—indeed, the method is simply a make-

shift to be employed when no other method of treatment is practicable. Even in very early cases I should not advise it, since I believe most of the symptoms can be relieved by regular catheterization, which is distinctly less dangerous.

I trust I have been able to show in this short lecture that treatment of hypertrophy

of the prostate is a very satisfactory undertaking for the surgeon who is thoroughly conversant with the nature of the disease and understands how to individualize.

Those prostatics who cannot be helped constitute the minority. The majority can be relieved or cured by the methods now well understood and generally practiced.

THE MEDICINAL TREATMENT OF PULMONARY TUBERCULOSIS.

BY G. L. HAEFELE, M.D., CLEVELAND, OHIO.

A review of the prescriptions written leads one to believe that medication plays the most important part in many if not all cases of pulmonary tuberculosis.

When it was announced to the world that the disease was curable by the open-air method, it gave an impetus to medication, which was formerly regarded as well-nigh useless as a curative factor.

The discovery of the tubercle bacillus and its recognition as the specific infectious element has given to its therapeutics a precision where previously all had been speculative and empirical. But regardless of the progress we have made, unfortunately as yet there is no medicine in whatever form administered that can cure the disease. In the present light of our knowledge all drugs are merely adjuvants to the hygienic and dietetic treatment, and when properly employed assist nature in hastening a curative process. Hence to rely upon medication as a means of cure must surely prove disastrous.

Most of the remedies prescribed for tuberculosis are the so-called specific mixtures which are supposed to be endowed with marvelous virtues, but in reality are merely preparations designed to fill the pockets of the manufacturers. This misplaced confidence clearly reflects a lack of knowledge of the nature of the malady. We know that it is impossible to treat the disease scientifically unless we are familiar with the pathological changes going on in the affected organs. The subjective and objective symptoms faithfully record the progress and intensity of the disease, and it is from the

indications thus derived that our treatment must be based. To obtain good results we must always utilize nature's resources; there is no compromise. The continuous inhalation of pure air is the only factor that can endow the cells with the power to resist the action of the toxins; this in turn enables nature to circumscribe the diseased area and retard the growth of the tubercle bacillus. To rely wholly upon this method as a means of cure is cruel and unscientific when we have valuable medicinal agents at our command that possess the power to initiate the methods and reinforce the influences by which Nature accomplishes her results.

With a multitude of remedies to select from it becomes a matter of individual opinion as to what constitutes the most valuable in the treatment of the disease. As each has its advocates, to do justice to all of them would require the space of a volume. It is not my intention to enter the realm of therapeutics, as the subject of my paper naturally suggests, but merely plead for the retention of the established remedies which in my opinion are more valuable than any of the newer ones we possess. Each case is a law unto itself, and he who is fortified with a knowledge of therapeutics is qualified to meet the indications as they arise. We no longer prescribe a drug unless it is clearly indicated, realizing as we do that the long and lingering nature of the malady demands that we preserve the stomach as much as possible for the imperatively necessary work of nutrition.

As the same general remedies are applicable in this as in all other diseases, I will

merely enumerate the most important of the special and symptomatic.

Special Remedies.—Creosote and its derivatives are more frequently prescribed than any remedy, and justly so. The prevailing impression that pure creosote or guaiacol in heroic doses is more effectual than its compounds even in moderate doses has never been demonstrated. Why some persist in administering such repugnant and irritating drugs which are so detrimental to the stomach, when their carbonates are equally as efficacious, is difficult to comprehend.

The hypodermic use of guaiacol was first suggested by Dr. Coghill, of Ventnor, England. He employed it almost exclusively for years, and regards it as by far the most certain antipyretic at our command.

"Administered in 5- to 10-minim doses, combined with liquor strychninæ to avoid depression, once or twice daily preceding the rise of temperature. . . . I use guaiacol also in nearly all chronic cases when the destruction of lung is extensive and the amount of expectoration is large and does not lessen where the guaiacol has been given internally."¹

Hypodermic injections of camphor dissolved in oil have been employed by Alexander for a number of years. He devoted himself almost exclusively to this form of treatment and declares that he obtained better results in consumptives with large cavities than from all other remedies combined. While it is not a specific it certainly gives a new lease of life to the unfortunate victim as no other remedy can. Its curative value is attributed to the leucocytosis and inflammation that it produces at the site of infection.

Symptomatic Remedies.—Before we employ any remedy for the relief of a particular symptom it is always advisable to ascertain the cause if possible, with a view to adopting more effectual means to palliate or remove it.

Usually the first symptom that demands our attention is a cough, which in a measure is physiological. It is nature's way of ex-

pellling the products of diseased action from the lungs. When it becomes too frequent and distressing and the general means employed are not effectual, it is necessary to resort to medication. The milder narcotics should be tried before recourse is had to morphine, which should be reserved for incurable cases and immediate action when necessity demands. Cannabis indica, hyoscyamus, codeine, heroin, and dionin fully supply the want. When expectorants are indicated we can employ ipecac or apomorphine, the former being preferred; in addition to these chloride or carbonate of ammonium, senega, squills, etc. When the amount of expectoration is excessive or gangrenous, also in cases of bronchiectasis, the inhalation of steam impregnated with the oil of pini pumilionis, ten to twenty drops added to a half-pint of boiling water, the same amount of turpentine pure or combined with the oil of eucalyptus or other essential oils, is the most effective method to relieve the condition. For the same purpose we can utilize menthol, myrtol, balsam Peru, tincture of benzoin, etc.

Pulmonary hemorrhage is frequently the first indication of the disease, although it may appear suddenly at any stage. The amount of blood discharged at a time varies greatly—in some cases merely a blood-stained sputum, while in others a pint or more is lost. In the mild cases the internal use of codeine to allay the cough is usually all that is required, while in severe cases there is nothing equal to a large dose of morphine injected subcutaneously. The value of ergot is undetermined, and there are those who regard it as injurious.

Fever.—Of all the individual symptoms it is this one that taxes our therapeutic resources to the utmost. Each pyrexial wave is produced at the expense of a corresponding amount of tissue. It is best not to employ the usual antipyretics, for their use, even for a short period of time, induces a depression which more than counterbalances the benefits derived, but when the open-air treatment fails to accomplish the desired results, recourse may be had to acetanilide, antipyrin, phenacetine, quinine sulphate, sodium salicylate, or lactophenin.

¹*British Medical Journal*, March 7, 1896.

Night sweats are best combated by an open window, light bedclothing, and bathing. A glass of milk with a teaspoonful of brandy at bedtime is frequently all that is required in the early stages. In advanced

cases in which the high evening temperature falls with a profuse colliquative perspiration, large doses of camphoric acid, or occasionally agaricin, are preferred. Atropine is to be avoided if possible.

BIER'S METHOD IN TREATMENT OF SOME NEUROSES—REPORT OF TWELVE CASES.¹

BY ALFRED GORDON, M.D.,

Associate in Nervous and Mental Diseases, Jefferson Medical College; Neurologist to Mount Sinai Hospital and to the Douglass Memorial Hospital.

The original idea that led Bier to his well-known therapeutic method was the fact that individuals affected with a mitral lesion (stenosis or insufficiency) and consequently presenting a venous stasis in the area of pulmonary circulation are refractory to pulmonary tuberculosis. The question arose therefore in his mind whether this so-called immunity was due to the congestion itself. If the latter is a natural defensive measure of the organism, why not aid nature by means of an artificially induced hyperemia in its struggle with pathogenic organisms of local inflammatory foci?

Bier and a multitude of other observers have since applied these ideas to the treatment of various affections of inflammatory nature, as for example in furuncles, anthrax, whitlow, abscesses, lymphangitis, cellulitis, infected wounds, diseases of the ear and of the throat, osteomyelitis, tuberculosis of the bones and articulations, etc. Very satisfactory results are being reported by various writers.

As to the mechanism of such a favorable action of passive hyperemia, there may be two explanations: either the congestion enhances phagocytosis or the extravasation of serum caused by the congestion has a bactericidal effect upon the pathological tissue.

Whatever the pathogenesis may be, the practical results are the most striking. Among all the symptoms, pain is the first to decrease and disappear. The relief patients experience soon after the application of the compressing bandage is extraordi-

nary. The morbid process for which the artificial hyperemia is applied decreases in intensity and gradually disappears. Surgical experience is abundant with examples of this sort. I will refrain for obvious reasons from enumerating all the affections in which Bier's treatment is indicated, also the contraindications.

In treating various functional nervous disorders I have frequently observed the relation of the latter to the changes in circulation. Following up the general medical literature I became acquainted with the history of Bier's discovery and its practical application. It then occurred to me that if a congestive hyperemia is useful in local surgical conditions because of the circulatory changes it produces, a similar application would perhaps be of benefit in local disturbances observed in neurological practice, although not of an inflammatory nature.

I undertook the study of the method in a few cases (twelve in all), kept strict records, watched the time of the beginning of improvement and its duration, also noticed the failures. As eighteen months has elapsed since I have commenced my observations, I believe it is a sufficient time to judge of the efficacy of the method.

My twelve cases are distributed as follows: Two with writer's cramp, two with telegrapher's cramp, one with pianist's cramp, two with acroparesthesia of the hands, one with erythromelalgia, two with tic of the neck, and two with brachial neuralgia.

Case 1.—Man of twenty-six, reporter, was obliged on one occasion to take notes in a court room for three days in succession.

¹Read before the North Branch of the County Medical Society, March 17, 1908.

In the evenings he had to correct his notes and then copy them for the paper he represented. The labor was excessive. He soon developed writer's cramp. As soon as he attempted to write, the thumb and next two fingers would become stiff and painful. Any other act which would bring the fingers in a writing position would be immediately followed by similar results. He tried various treatments, and even rest from writing, but all without avail. When I first saw the patient he told me that he had been suffering from the cramp six weeks, and that he felt very unfortunate in being idle. I applied a bandage around the middle of his right arm and kept it on for an hour. The same procedure was employed in the evening. As the worry and anxiety about his condition caused insomnia, I gave him also some bromides; the latter was discontinued on the fourth day. During the first two days he was told to abstain from work. Improvement was noticed after the fourth application of the bandage. He was told to go to work and write but moderately during the first few days. The application of the bandage was continued during the following twelve days twice daily. No medication was given, and he resumed his arduous work as usual. I saw him three months later, and there was no recurrence of the symptoms at that time. Only six weeks ago he returned with another attack. The treatment was repeated, and again there was disappearance of symptoms.

Case 2.—Man of thirty-eight, bookkeeper, a neurotic individual, gradually developed writer's cramp. A trial of various medications with rest gave negative results. Bier's method was applied in the manner described in the first case, with very satisfactory results. Improvement began on the third application.

Case 3.—Man of twenty-four, telegraphist, became addicted to alcohol. He soon developed a cramp in his hand, which appeared not only during his usual work, but also upon any act which required a position of the hand similar to that of the telegraphic work. Bier's method gave remarkably prompt relief. Improvement was observed on the second application, and the patient

resumed his work. In all he had thirteen applications of the bandage.

Case 4.—Man of thirty, telegraphist, presented a history similar to that of the previous patient. Improvement began with the fourth application, but it required sixteen applications before notable results were obtained. However, a recurrence took place two weeks after the first recovery, and now the patient still has occasional attacks in the right hand. The success is therefore not complete.

Case 5.—Girl of twenty-four, teacher of piano. She is of a highly nervous make-up. She had a large class of pupils and worked very hard. She became neurasthenic and developed a cramp in the right hand whenever she attempted to play. A rest of two months improved her asthenia. As soon as she resumed her work the cramp returned. Bier's treatment was immediately instituted as soon as she came under my observation. Improvement followed the fifth application. During the entire treatment, which lasted six weeks, she practiced on the piano, at first for a short period and later to the usual extent. She made a complete recovery.

Case 6.—Woman, forty-five years of age, has been suffering from numbness and tingling sensations in the fingers of both hands. Her acroparesthesia inconvenienced her considerably, as in doing her housework she had to avoid the contact of water: cold or hot water made her suffer. In winter she could not wear gloves as they increased the paresthesia. Exposure of the hands to cold had a bad effect on the skin. Various treatments were tried without avail. Bier's method was applied as soon as she came under my observation. Improvement in the condition became manifest upon the fifth application of the bandage. This was kept up for two months with two daily applications of an hour's duration each. Her present condition is such that while there is no complete recovery the benefit derived is enormous, as the woman is able to do her work. The bandage applied in the morning gives her relief for the entire day. Unfortunately she cannot do without it. I must say, however, that if the bandage is omitted for twenty-four hours the paresthesia re-

turns, but to a far less degree than prior to the treatment. At all events, if there is no recovery there is great amelioration under this simple treatment, while the ordinary therapeutic measures employed in similar cases resulted in absolute failure.

Case 7.—Man of forty-two, laborer, presented the same symptoms as Case 6. Hydrotherapy, various liniments, and internal medications failed to relieve the condition. Bier's method proved to be very beneficial. The patient returned to work, but similarly to the previous case there is no complete recovery, as he is obliged to use the bandage twice a day. However, this treatment gave him more relief than anything else, and what is more important, enabled him to return to work. He has been under this treatment for three months.

Case 8.—Man of twenty-one, grocery clerk, presented a typical picture of erythromelalgia of the feet, viz., burning pain and reddening of the skin. The symptoms increased on walking or standing. The condition, of course, was rebellious to the usual treatment. After various trials with ordinary remedies Bier's method was employed. The patient had in all fourteen applications. The only relief obtained was in the intensity of the pain. While the patient continues to suffer, nevertheless he is able most of the time to attend to his duties. The other symptoms remained as before the treatment. In view of the fact that erythromelalgia is an incurable affection, a certain amelioration of the most disturbing symptom is a decided gain.

Case 9.—Woman of twenty-seven, sales-lady, has been suffering for the last ten years from a tic of the neck. The movements are at times so violent that she is unable to attend to her duties. No previous treatment brought any results. My first treatment consisted, besides general measures, mainly of educational exercises because of the mental make-up of the patient—slow and regular movements of the neck. I succeeded considerably with my method, but unfortunately the patient found it troublesome and refused to continue it. Empirically I tried Bier's method, and for its simplicity it appealed more to the patient's nature. Amelioration

was considerable and rapid, but unfortunately it did not last long enough to warrant the continuation of the treatment. The bandage was applied around the neck for half an hour three times a day.

Case 10.—Boy of seventeen had a tic of the neck. After a long trial of various means I finally had recourse to Bier's method. The application of the bandage around the neck for a half-hour twice daily brought great improvement on the fourth application. Although he is not entirely well, nevertheless the application gives him relief for the following several hours.

Case 11.—Man of twenty-six, collector, developed a brachial neuralgia on the right. It was evidently of a rheumatic nature. The condition existed two months, and there were no evidences of genuine neuritis. The only symptom was subjective pain and paresthesia. Bier's treatment gave prompt relief. Applications were made to the proximal end of the arm twice a day for an hour each. The pain had almost disappeared at the end of the eighth application. The paresthesia was the first to disappear. Eventually he made a total recovery. In all he had twenty-one applications.

Case 12.—Man of thirty-one, weaver, presented a history similar to that of the previous patient. While there was considerable improvement, however, the patient still suffers from pain; nevertheless he is able to do his work and is by far less inconvenienced than prior to the treatment. He has been under my care for the last three months.

COMMENT.

The justification of my attempt in applying this new treatment is to be found not exclusively in the spirit of empiricism, but in the conception of the affections I experimented upon.

Let us discuss for a moment the pathogenesis of these diseases.

The nature of *occupation neurosis* (five cases) is still debatable. Muscular fatigue, irritation of the peripheral nerves, and cerebral influence are the three factors called upon to explain the phenomena of writer's, pianist's, and telegrapher's cramp. Any one of them by itself is capable of explain-

ing the curious phenomena. The fact that each repetition of the act provokes the muscular spasm speaks very much in favor of the fact that the muscular exhaustion plays a great rôle. *A priori* one can say that when a large supply of blood is procured the nutrition of the exhausted muscles is thereby elevated, and consequently their function improved.

Acroparesthesia (two cases) is due to an irritation of the vasomotor centers, by which the arteries are contracted and the nourishment of the sensory nerve-endings in the extremities diminished. A congestive hyperemia therefore will improve the nutrition of the sensory nerves.

In *erythromelalgia* (one case) the disturbance of the muscular supply is the main cause of the morbid manifestations. Bier's method may have some influence upon the condition.

Brachial neuralgia (two cases) has according to the modern views an anatomical basis. As I have shown from personal pathological investigations (*New York Medical Journal*, July 21, 1906), a degener-

ation of the peripheral nerve is frequent if not constant, but the blood-vessels undoubtedly play a certain rôle in the causation of a degenerative state of the peripheral nerve. Consequently a change in the blood supply such as seen from Bier's method may have a favorable influence on the affection.

The above data represents, as you can readily see, physiological reasons for my investigations in the field of therapeutics. While I am unable unfortunately to report brilliant results in all the cases, nevertheless the few recoveries and considerable improvement in some of the cases suffice to impress upon our minds the fact that Bier's method has a wider field for its application than surgical measures. It should not be neglected in neurological practice, in which the therapeutic armamentarium is quite meager. In pointing out also some failures I wished to emphasize this truth, that no matter how mild the degree of improvement may be, if we are able to decrease or remove pain without removing totally the cause of the disease itself, the treatment certainly commands our attention.

A CASE OF EXOPHTHALMIC GOITRE—ITS TREATMENT.¹

BY EDWARD B. KAPLE, M.D., ELBRIDGE, N. Y.

It is not my purpose to present a paper discussing the symptoms or diagnosis of Basedow's disease, nor its pathology, with which we are none of us thoroughly familiar, but simply to report my results in the treatment of one case.

During the past few years there have appeared many reports of the results obtained from the administration of some form of serum, or from certain methods of electrical or mechanical treatments of this disease. So far as it has been my privilege to examine these reports, they have been mostly favorable to the particular form of treatment discussed in the report, and I have often wondered if so large a percentage of the unsuccessful as of the successful results were being published, or if they were reported, whether any form of

either surgical or non-surgical treatment would show so satisfactory results as would seem to be indicated by the individual reports. In fact, I am unable to escape the conviction that if our failures were more generally reported, and our apparent successes were not reported as such until a sufficient time had elapsed to so determine them, the published statistics of cures would be greatly modified, and the profession thereby would acquire a more correct conception of the true value of these various forms of treatment.

I am presenting my contribution without any "cure" or "failure" label, leaving that matter for the consideration of my readers.

Mrs. H. G., aged thirty-one years. She has had no serious illness. Married ten years. Two children, aged five and three; no other pregnancies. Menstruation began at age of fourteen, never regular, and in-

¹Read before the Onondaga County Medical Society, in Syracuse, March 19, 1907.

clined to go over time. During the past summer she did not menstruate for a period of five months. Menstruation usually lasted from five to six days. First confinement a protracted one, but not instrumental; second labor normal. Habitually constipated. Always of nervous temperament, but reports nervousness as having been much more noticeable ever since her first confinement. Attention was first called to the enlargement of the thyroid gland soon after her first confinement, about five years ago, and about two years later she first noted the exophthalmos.

It is worthy of note that the increase in her nervousness, which the patient attributed to her pregnancy, was closely related in time to the first appearance of the goitre.

Examination at this time showed as follows: Marked exophthalmos, pupils normal, muscle tremor, twitching of facial muscles. Flushing of skin frequent. Respirations rapid, varying from 25 to 35. Pulse varied from 120 to 145, soft and weak. Both pulse and respiration are greatly affected by patient's mental state, both becoming less rapid as soon as her attention is directed elsewhere. Thyroid moderately enlarged, both lobes. Pulsations over gland not very marked, but carotid pulsations very noticeable. Cardiac impulse slightly increased in force, but unable to detect any increase in area of cardiac dulness. Perspires very freely. Sleeps poorly.

Previous to consulting me the patient had been under treatment by a so-called osteopath in this city, taking treatments regularly from July, 1905, to February, 1906. Her pulse-rate when she began taking these treatments, she states, was 126, and when she came to me it varied from 120 to 145.

On February 26, 1906, I began the administration of antithyroidin, and from that date to June 29 she took daily 10 to 15 drops t. i. d., taking in all sixteen bottles of 10 Cc. each. During part of this time she also took treatments at my office, as follows:

From March 7 to 17, daily treatments with the vibrator. These treatments consisted of vibratory massage of the thyroid

and cervical glands, using the brush vibratode with light pressure and short stroke. In addition to this, spinal treatments were given over the cervical and dorsal regions, using the ball vibratode with medium stroke and pressure. At times, the bowels becoming inactive, I added to the above, treatment over the lumbar and sacral regions with deep stroke and heavy pressure, together with stimulation over the colon. In every instance this resulted in a relief of the constipation.

From March 10 to April 15 these treatments were administered every second day. From April 24 to July 5 she received treatments every third day, but alternated the vibration during this time with the direct application to the thyroid of the high-frequency, high-potential current, generated by a H. F. coil through a glass vacuum tube.

I would state that the objection which may with justice be raised at this point, namely, the unscientific method of administering the serum at the same time with the vibratory and electrical treatments, was fully appreciated by me, and I realized that it might detract very much from the value of the observations. This patient, however, was in no mood for any experimenting on my part. She wanted results, and that as soon as possible. I was unable to see how the physical methods could in any way interfere with the results of the serum treatment, so in order to gain time and to give the patient the benefit, if any, of both treatments, I used them simultaneously. Had my results been brilliant it would have been unfortunate that I should have been unable to say positively to which method it was attributable; but the results were such as to bring very little credit to either. Briefly, my records show them to have been as follows:

Stronger, less nervous; muscle tremors less noticeable; sleeping better; menstruated regularly April, May, and June; thyroid smaller. No improvement aside from these symptoms, and in fact most of this was noted at the end of the first two months of treatment. Neither the exophthalmos, the

pulse, nor the respirations were appreciably affected.

Such results certainly were not sufficient to justify my thinking highly of the physical methods or the antithyroidin in this case. In fact, the natural fluctuations peculiar to this disease would account for every improvement noted.

I did not see the patient again until August, on my return from my vacation, at which time I was able to discover no change in her condition.

During this interval the patient reported suffering an attack of tonsillitis accompanied by high fever, intense nervous excitement, tremors, and rapid and irregular heart action. All the symptoms which W. Gilman Thompson considers an evidence of the toxic rather than neurotic character of the disease were present. He states that in "a large proportion of cases the agency which appears to initiate the acute toxemic seizure is some intercurrent mild infection, such as tonsillitis, pharyngitis, bronchitis, influenza, or similar acute ailment."

Later the patient suffered another of these acute attacks. This began on the morning of December 24 with watery, offensive stools, preceded by pain, fever, and also pains in various parts of the body. On the following day she was nauseated, stools were of same character but less frequent, with fever, chills, and intense headache. On the third day, when I was called, she was still suffering from the nausea and intense headache, aching all over, stools very loose but infrequent, pulse 135, temperature 102°, very restless, tremors pronounced, voice tremulous, and profuse perspiration. Gradual improvement during the next two days.

In August I obtained, through the kindness of Dr. S. P. Beebe, a supply of the Rogers-Beebe cytotoxic serum, and began administering the same. Full description of the preparation, properties, and effects of this serum may be found in the *Journal of the American Medical Association* for September, 1906.

Dr. Rogers reports the statistics in 90 cases of exophthalmic goitre treated with

this serum, as follows: 23 cured of all symptoms, 53 more or less improved, 11 failures, and 4 deaths. Speaking of the reaction to this serum he says:

"It is of two distinct kinds. One is fortunately rare and occurs about five minutes after the injection. There is a sudden dilatation of all the superficial capillaries. This blush may be succeeded by a cyanosis, and is accompanied by a feeling of distressing dyspnea and faintness, with rapid and feeble pulse, nausea and vomiting, and diarrhea. These alarming symptoms pass off in an hour or sooner, if diffusible stimulants are given, but the patient remains weak and uncomfortable for about a day.

"The other reaction is fairly constant, and as a general rule seems a necessary preliminary to the subsequent improvement. At the point of injection there is immediately some burning sensation, which is followed within a few hours by considerable swelling and erythema which may extend from the shoulder to the wrist when the injection is made in the arm, and continue for several days. This erysipeloid edema has sometimes been much more pronounced with the pathological than with the normal serum, but the pathological serum, though causing more local redness and swelling, is less painful. At about the same time, or some twelve hours after the injection, there is generally some fever with increase in the tachycardia or an irregular heart action, and often dyspnea which may last a day or two."

On August 12 I administered the first injection of this serum. It was a serum prepared from normal glands. The injection was repeated every five days for six doses. During the time the patient was under this serum treatment she received no other medication or treatment, nor did she change her habits or mode of living in any way, except that she was less active at my request. All injections were made at or near the insertion of the deltoid muscle, alternating the arm at each injection.

From my report to Dr. Beebe I quote as follows: "Local reaction nothing, save

slight area of redness extending two or three inches around the point of introduction of serum which lasted not over twenty-four hours, with slight induration and tenderness over same area. There were no signs of any lymphatic irritation, not even of the axillary glands. The local manifestations have not been more than are frequently obtained from a simple hypodermic injection, and have not differed one time from another. There was at no time any elevation of temperature. The day following each of the first three injections the patient suffered some nausea, and after second injection she vomited once. Following the last two injections none of these symptoms were manifest. The bowels were not disturbed. Pulse-rate previous to injections varied from 110 to 125. There have been times during these treatments when it has been as low as 96, and at no time since the second injection have I found it higher than 114. Sleep is irregular and not influenced as yet by the injections. Very little change in her nervousness. Seldom any muscle tremor now. Respirations continue short and rapid and perspiration profuse and easily excited. Prominence of eyes not diminished. Size of thyroid unchanged, in fact, is slightly fuller, as is always noted at time of menstruation, and patient has not menstruated since the first week in July."

On October 1 I began the introduction of a second supply of normal serum, in the same way as before, except that the injections were given every third day for six doses.

I quote from my second report to Dr. Beebe of the patient's condition under date of November 4, two weeks from the date of the last injection: "Following the first two administrations there appeared to be slightly more tenderness around the point of introduction, and patient complained of some tenderness of axillary glands. No other local manifestations occurred, and after the second injection even this was not noticed. The general reaction was in no way more noticeable than when administering the serum every fifth day. Patient reported

sleeping better and less nervous, with less rapid respiration. I noted, however, that any exercise or emotion still had an effect on the respiratory and cardiac function. Patient thought eyes were less prominent, but I was unable to note this. The thyroid certainly is smaller and is scarcely noticeable except on palpation. Pulse-rate variable, but not at all satisfactory, as I found it 120 during examination."

On November 25 I began the injection of a serum prepared from diseased glands every fifth day, and continued them for six doses. In no way did the reaction, either local or general, differ from that obtained from the normal serum.

On January 15 I administered a pathological serum concerning which Dr. Beebe wrote: "This is a very good serum, and I believe it will be much better for your case than the one you are using." This serum was given every fifth day for three doses.

Following the first two injections the reaction was not different from that which we have already recorded, except perhaps a trifle more local tenderness. Following the third and last injection, however, given on January 25, the arm from the shoulder to the elbow was sore and lame, the axillary glands and the lymphatics along the under surface of the arm were very tender; the patient was nauseated, ached all over, and was too sick to be around. These symptoms persisted for about twenty-four hours.

The patient, seen by me on February 12, reported having menstruated in December and January, the former period lasting one and one-half days and the latter three days, and with the flow more natural in color and amount than at any time for the past year. Sleeping was good. Perspiring freely on exertion, but at other times much less than heretofore. Appeared much less nervous and excitable. Goitre scarcely perceptible. Eyes certainly appeared less prominent. Pulse-rate at first examination found to be 96, but partially disrobing the patient to more thoroughly examine the heart action seemed to cause marked nervousness, and rate jumped to 142. There was then noted a soft mitral and aortic murmur, but no

increase in area of cardiac dulness could be detected. A little later the pulse fell to 102.

She was seen again on March 6, and reported having menstruated in the later part of February, about five and a half weeks from previous period. Flow continued for three days and was apparently normal. Sleep and perspiration normal. Less nervous. Pulse 119. Heart and goitre unchanged since last examination. Exophthalmos apparently less.

It was not my intention to further continue the use of the serum, but I received a letter and serum from Dr. Beebe, with a request that I administer six more doses. From this last serum the reaction was more marked than from any theretofore, and the patient seemed to improve from that time more rapidly.

The above report was presented to the society, notwithstanding that a sufficient time has not elapsed from date of last injection to permit any positive deductions as to its value, because the programme on Basedow's disease had been arranged for this date, and the President requested me to present the report to date at least.

Nearly eight months having now elapsed, it would seem as though my results could be given with justice to the treatment. The patient, examined in September, presented herself with a pulse-rate of 90, goitre practically gone, and exophthalmos while still noticeable, yet much reduced. She reported as sleeping well, no excessive perspiration, no more nervous than her temperament would account for, and had menstruated regularly for past five months.

Examined on October 22, nearly six months after last injection, and after a two weeks' "hard cold and cough" (apparently an attack of influenza), I found a rapid heart action, patient very nervous and apprehensive, breath rather short, and menstrual period about ten days overdue.

Seen again one week later, the above symptoms had disappeared; she was menstruating normally, and her pulse was 87.

For the past six months this patient has been doing her own work, which consists

of the housework on a large farm, besides caring for two children, and is apparently at the present time in usual health; notwithstanding this, the persistence of the slight abnormal prominence of the eyes and the slight tachycardia still renders the question of cure debatable.

I apprehend a recurrence.

IPPECACUANHA IN AMEBIC DYSENTERY.

In the *Military Surgeon* for January, 1908, RAYMOND writes entertainingly on this topic, and indicates the line of treatment followed by him in his cases.

The indications for treatment are rest and a specific therapy. The rest must be absolute, and is met by confinement to bed and a dietary of milk; the therapy consists in the ingestion and retention of ipecacuanha in proper doses and at proper intervals. He says:

1. Put your patient to bed with the expectation of his remaining there for ten days. Let this be done in the morning after a warm body bath, and allow the patient four ounces of milk every two hours. Give him broken doses of salts so as to secure during the morning a free liquid defecation. Examine this for the *ameba dysenteriae*, and if found—

2. Enjoin the patient to fast from 1 to 8 P.M. or from 2 to 9 P.M., except the taking of water. By 8 or 9 P.M. have the patient made comfortable for the night; his teeth cleansed and the mouth washed out; his urine voided; the dorsal decubitus, with head pillowed comfortably but not too high. Instruct him that the lights are about to be turned low and noises quieted, and that after the taking of his medicine he must not talk or be conversed with, but must endeavor to fall asleep, and in the meantime he is not to shift his position or move a muscle for four hours; that by heeding these instructions he will in all likelihood be able to retain the medicament, and that if he does not retain it for two hours it will be readministered at once. At 8 or 9 P.M. administer to the patient (if an adult) thirty drops of laudanum in a teaspoonful of

water (preferably cinnamon), and twenty minutes later give six gelatin capsules each containing five grains of ipecacuanha, to be swallowed with the least water possible and by raising the head but slightly from the pillow. Immediately apply an ice-bag partially filled with mashed ice across the throat, and place a spit cup convenient to the patient without specially directing his attention to its possible function. The nurse should have care that the bed covering is neither too abundant nor too scant to cause him to call out to have the window closed against the cool night air. If a capsicum plaster over the stomach is thought advisable, do not apply one that will require removal within twenty minutes and thus disturb the patient, but make a light and weak plaster of flour, water, and mustard well protected with white of egg, that will not have to be removed under four hours. Lower the lights and enjoin quiet. The patient will probably fall asleep, and awakening near 2 A.M. may eject a mouthful or two of water-brash fluid without depressing nausea, or he may not awaken till 4 A.M., to find that he can cautiously shift his position toward one side or other or slowly draw up his limbs into a restful position without wabbling or succussion of the abdomen that might precipitate an emesis.

Let the medical attendant disabuse his mind (if he entertains the opinion) of the fallacy that the great majority of these patients cannot take ipecacuanha in large doses and retain it, or let him test the validity of the author's contention on his own person and speak from personal experience alone. At 5 A.M. the patient will be able to take four ounces of milk, the same to be repeated at 6 and 7 A.M., and then after a fast of two hours repeat at 9 A.M. the dosage of the previous night, reduced one-half. By noon, or 1 P.M., the patient will be able to take four ounces of milk, the same to be repeated hourly until 4 or 5 P.M., and then after a fast of four hours repeat the full dosage of the previous evening. In the meantime the patient may have had one or two stools. Examine the first morning stool for *amebæ dysenteria*; they will probably

not be found. What has become of them the doctor doesn't know, and the patient doesn't care. Keep this routine for seventy-two hours; then discontinue all medication except for the administration of fifteen grains of ipecacuanha preceded by twenty drops of laudanum each evening at bedtime for the remainder of the week; then, say, five grains for two or three evenings, when the specific causative agent of amebic dysentery may be considered as eliminated from the system and the processes of repair inaugurated.

After the second or third dose of the ipecacuanha the patient may not desire the ice-bag or the capsicum plaster, and takes his medicine as a matter of routine, preceded by the laudanum. By the third day the stools are becoming well-formed, or a tendency to constipation may require a saline laxative to give a semifluid stool in which to demonstrate the absence of the amebæ.

SERUM TREATMENT OF EPIDEMIC CEREBROSPINAL MENINGITIS.

In a valuable paper on this topic in the *Journal of Experimental Medicine* of January 1, 1908, FLEXNER and JOBLING state that in order to avoid unnecessary repetition in preparing this discussion, some of the propositions of the authors have been stated in a manner that might readily convey the impression that they regard it evident and established that the antiserum has proven its usefulness as a therapeutic agent in epidemic meningitis. The facts of their belief, at the present time, are quite otherwise. No one could be less convinced of the final fact of its value than they are. On the other hand, they believe that the data at hand warrant a wider trial of the antiserum, particularly as no other and better means of combating the disease is available. They think, however, that it is unjustifiable to employ the serum indiscriminately and without proper clinical and bacteriological controls. They will be able, at the Rockefeller Institute, to supply a moderate amount of the antimeningitis serum for use under conditions of control which they will prescribe.

EDITORIAL.

THE PROPHYLACTIC TREATMENT OF PNEUMONIA.

It is not many years since the best men in the medical profession regarded pneumonia as being an acute inflammation of the lungs, and did not associate it with the growth of any specific bacterium, but the early studies of Sternberg, Friedlander, and, since their day, a host of other investigators have practically proved that all forms of pneumonia are due to microorganisms, and that in a large proportion of cases the pneumococcus is the specific agent which produces the disease. It has also been known ever since the investigations of Sternberg that pneumococci are present in the secretions of the mouth and throat in a large proportion of healthy persons, and it will be recalled that, much more recently, Park and Williams, examining 200 patients, most of whom were considered normal, found pneumococci present in the mouth in a large proportion of them all, whether they lived in the city or in country districts. Longcope and Fox also had 83 per cent of positive results. Furthermore, these investigators found that there was a distinct increase in typical pneumococci in the mouth secretions during the months of December and January, and also that the virulence of this coccus underwent changes at different periods. Occasionally, however, virulent pneumococci were isolated constantly. That pneumonia, due to the pneumococcus, is not only an infectious disease in the ordinary acceptance of this term, but is also capable of being transmitted from one person to another through the discharges from the mouth and nose, has also been repeatedly observed in private and hospital practice, and further than this a patient whose mouth secretions have not revealed the pneumococcus has been found to have them in considerable number shortly after an adjacent bed had been occupied by a patient suffering from lobar pneumonia. Fortunately, the pneumococcus is an organism which

does not possess very great vitality, and dies under conditions which many other microorganisms easily resist.

That all patients who have pneumococci in the mouth do not suffer from pneumonia is, of course, dependent upon the fact that their various methods of vital resistance are actively maintained, and it is only when some cause arises, either acute or chronic, which diminishes this resistance that the infection takes place. Perhaps, too, some conditions of the mucous membrane may arise by means of which the coccus gains entrance to the blood stream in certain cases, and not in others.

It is evident from these facts that much can be done toward preventing the spread of this disease by destroying the mouth and nose discharges of patients as soon as these discharges escape from the body, and secondly, by resorting to mouth-washes which are distinctly deleterious to this microorganism.

There also can be no doubt whatever that a large number of diseases of the respiratory tract arise from the fact that bedclothing is thoroughly sprinkled with pneumococci by careless patients, who, even if they do not expectorate in such a slovenly manner as to manifestly soil their clothing, frequently cough or sneeze without holding something in front of the face, with the result that an invisible spray, laden with the coccus, is widely distributed, although the bedding still remains clean in appearance. We have seen a number of illnesses arise in hotels which are frequently resorted to by persons recovering from attacks of influenza, and to which patients whose vital resistance has been diminished by other maladies have also resorted, only to become ill with respiratory diseases. The use of a mouth-wash, by patients who are not so ill that it is impossible to employ a mouth-wash, is, therefore, wise. Particularly is this the case before an anesthetic is given, since by this means postoperative pneu-

monia can often be avoided. When one considers how exceedingly foul the mouths of some patients seem to be, it is remarkable that postoperative pneumonia does not more frequently follow the use of an anesthetic, since under these circumstances it is conceivable that a large number of pathogenic microorganisms must be drawn into the deeper respiratory passages.

An investigation carried out by Wadsworth, it will be remembered, showed that, while complete disinfection of the mouth is impossible, a weak solution of alcohol is the most effective of all mouth-washes, and it will be recalled that he advised a hydro-alcoholic mixture to which was to be added a little bicarbonate of soda and common salt with glycerin, using a quantity of alcohol as great as the mucous membrane of the mouth could stand with comfort.

RATIONAL THERAPEUTICS AS OPPOSED TO THERAPEUTIC NIHILISM.

The very prevalent belief, expressed or considered, by the vast majority of the laity to the effect that medicines possess some supernatural power of doing good without at the same time possessing any power to do harm has, to a certain extent, found a holding-ground in the minds of many physicians, with the result that they have used drugs carelessly without any attempt to make the knowledge of the action of the drug fit the exact needs of the individual; and further, there can be no doubt that sometimes actual damage is done by drugs being given through a mistaken idea as to their action or as to the malady from which the patient is suffering. These professional mistakes are, however, becoming less and less as the profession becomes better educated, not only as to the physiological action of remedies, but as to the pathological processes which are present in disease.

Many years ago as the result of the abuse of drugs therapeutic nihilism developed, and this, in turn, was followed by the development of homeopathy and the so-called law of infinitesimals, a fad illustrative of the revulsion of feeling against excessive drug administration, which fad, in view of the

better education of its followers, and in view of the wiping out by better prescribing of the reason for its existence, has now practically ceased to exist.

Occasionally, even at the present time, physicians of considerable prominence array themselves upon the side of therapeutic nihilism, or utter remarks which lead the profession and the laity to the belief that they are so arrayed, although in their hearts they have great confidence in certain well-recognized therapeutic procedures. These cleverly worded and somewhat empirical statements, when copied in the newspapers, do a great deal of harm, and unlike many other statements are not compensated by any good which they may achieve in another class of readers. So far as we are aware, the best known so-called therapeutic nihilist of the day is only so regarded because he has been urged to the condemnation of therapeutic procedures by being instinctively a pathologist. He has become a one-sided observer and has failed to recognize the difference between changes which can be brought about in living tissues and those irreparable changes which are found in the autopsy-room. His case is a good illustration of what a man suffers who is not an all-round physician, but he is no more to blame, and, indeed, is less to blame, than a very large number of the profession, who, throwing what little knowledge they have of morbid anatomy and pathology to one side, employ drugs more and more, as years roll by, on a purely empirical basis, and in a most reckless manner, committing an error far more egregious than is committed by the enthusiastic pathologist, who at least does no harm by the erroneous administration of drugs, and so permits Nature to work out its own salvation—a salvation which may often be hurried or aided by the proper use of remedies, but which cannot be forced in the face of impossible conditions.

In another portion of this issue of the *GAZETTE* we publish an abstract of an editorial in the *Medical Record* based upon an interesting and forcible address made recently by Dr. Abraham Jacobi, of New York (also in this issue), who inveighs against therapeutic nihilism at the same

time that he regrets the prevalence of an excessive degree of therapeutic optimism combined with the careless use of remedies.

We have also read with much interest an address delivered by Sir Dyce Duckworth, of London, before the Faculty of Medicine of Paris, upon "The Diathesis and the Personal Factor in Disease." The address is too long for us to quote, but the closing paragraph not only embodies the experience of a practitioner of many years and of great professional eminence, but also serves as a bulwark against the development of pure science as opposed to clinical observation, and therapeutic nihilism as opposed to the proper use of remedies. Sir Dyce says: "We are, I much fear, suffering in these days from a widely spread spirit of incredulity, timidity, and hopelessness in the whole realm of therapeutics. We spend much time in cultivating elaborate diagnosis, and this is quite right, but we grievously neglect our main business as healers and mitigators of disease. Our knowledge of the *materia medica* has declined out of all proportion to that gained by the progress of bacteriology, which claims to supersede the older therapeutical art. It will never supersede it, for there are, as Sir William Jenner said, but two great questions to be answered at the bedside of a sick man—what is the matter with him? and what will do him good? Are we not too apt to-day to forget the second question, to experiment with synthetical novelties, and to neglect the old long-approved remedies? In short, are we not, as physicians, slowly drifting into the position of abstract scientists and gradually losing our proper relation to the sick as skilful medical artists?"

TETANY PARATHYROPRIVA AND ITS TREATMENT.

It is not many years since the investigations of several English and Continental physicians and surgeons proved conclusively that the removal, or atrophy, of the entire thyroid gland was speedily followed by the development of a train of symptoms commonly known as myxedema or strumathyropriva. Much more recently, however,

further advances in physiological research and surgical technique have caused other cases to be reported in which during the operation upon the thyroid gland the parathyroid bodies have been directly damaged, or have ultimately atrophied because their blood-supply was injured during the operation. In these cases a train of symptoms differing very widely from those following extirpation of the thyroid gland has been produced, the most noteworthy of which has been the development of tetany, rapid breathing and tachycardia, and finally death. At first the relationship between the parathyroid bodies and these serious consequences was not recognized, but the researches of Halsted, MacCallum, Getzowa, and a large number of others have proved that there is a distinct relationship, and this has led to interesting investigations as to the blood-supply of these parathyroid bodies, and as to the effects of extirpating them in animals as well as in man. Further than this, it has been found that the administration of parathyroid bodies derived from animals may be resorted to for the modification of these dangerous symptoms when they arise, and the parathyroid bodies have been transplanted with some success to the tissues of the patient who has been robbed of these important organs of internal secretion. Finally, MacCallum has seemed to show that the administration of the calcium salts, such as calcium chloride or calcium lactate, can be relied upon to at least temporarily put aside the tetanic symptoms which are so characteristic of this condition.

The whole subject is as yet largely in the stage of investigation, but we have a considerable amount of information which is of extraordinary interest. The points which seem to be most important are, first, those which have to deal with the vascular supply of the parathyroid bodies, because this vascular supply is a guide to the glands and must be cared for lest it be damaged; and secondly, with the fact that the parathyroids are often embedded in the thyroid gland in such a manner that they may be readily overlooked, particularly as their relative positions in respect to the geographical markings of the thyroid are variable. Thus,

they are sometimes found on the isthmus of the thyroid.

The fact that there may be supernumerary parathyroids may explain why it is that tetany parathyropriva fails to develop in certain cases after these bodies have been damaged or removed, and in some patients a considerable number of these bodies may be found in widely separated positions. Thus, in Pool's 16 dissections the average number of parathyroids was 2.9 per person, but in Verbeley's statistics he found four parathyroids 108 times in 138 autopsies. Getzowa has found accessory parathyroids within the thymus or in the tissues below the thyroid. Again, the interesting studies of Forsyth upon no less than 50 humans and 70 different species of animals and birds show a marked variation in number. Thus, in three monkeys the parathyroids numbered 1, 8, and 4 respectively; and further, sometimes a parathyroid was found embedded in a lymph node and was microscopical in size. In this connection; too, we must consider the somewhat hypothetical proposition that aggregations of cells capable of performing parathyroid functions may exist in other parts of the body, just as Zuckerkandl's parasympathetic bodies, Luschka's coccygeal gland, and the intercarotid gland (Mulon) have been found to contain cells which are supposed to perform a function identical with the medullary portions of the suprarenals. Forsyth has collected several such cases.

The belief that the parathyroids are widely different in function from the thyroids is vigorously combated by Forsyth, who believes them to be part of the latter, or "splittings off" which have assumed functions but have not yet formed vesicles. He thinks that the thyroids and parathyroids secrete the same substance. He believes that the parathyroids are immature thyroids, and advances several reasons for his belief. Few agree with Forsyth in these views.

It is evident therefore that a number of factors enter into the problem of parathyropriva cases.

It is interesting in this connection to note that MacCallum and Voegtlin suggest that

the extraordinary beneficial results which follow the intravenous injection of calcium salts when the parathyroids have been destroyed render it possible that similar medication may be of advantage in other forms of tetany, particularly those of pregnancy and lactation. They further suggest that the tetany of lactation may be due to the great drain of calcium in the production of milk, particularly in those persons who have a natural parathyroid insufficiency.

TUBERCULOUS NEPHRITIS.

The term tuberculous nephritis conveys the impression of a condition characterized by the presence of tubercle bacilli in the kidneys and with gross or at least microscopical lesions produced by their presence, though the general appellation is sometimes used to describe kidney degenerations quite similar in progress and termination to those observed aside from the presence of the tuberculous diathesis. Thus in the course of a pulmonary tuberculosis or one involving any part of the body there may develop chronic nephritis which may be epithelial, interstitial, or amyloid. It is this form of tuberculous nephritis to which Tinel (quoted in the *Annales des Maladies des Organes Génito-Urinaires*, vol. i, No. 3) calls attention in a special study. He notes that the amyloid kidney is frequently the terminal stage of any tuberculous lesion, and is characterized by polyuria, marked albuminuria, edema, often an abundant serous diarrhea, incident to amyloid degeneration of the intestines, and enlarged liver and spleen. There are neither cardiac hypertrophy, arterial hypertension, nor uremic manifestations. Indeed, the symptoms are considered so diagnostic that Browett observes that when a patient showing the marks of tuberculous cachexia exhibits a clear polyuria, pronounced albuminuria, and serous diarrhea, there is no difficulty in diagnosing the presence of amyloid degeneration of the kidneys.

Chronic parenchymatous nephritis is more commonly found in patients less advanced

in the disease, often indeed in those suffering from lesions which are essentially latent. The urine deposits a heavy sediment made up of casts and leucocytes, contains considerable albumin, and is more abundant than is common in parenchymatous nephritis due to causes other than tuberculosis. The renal permeability to methylene blue, to urea, and the phosphates is often augmented, whilst the chlorides are retained. There is frequently pronounced edema, nearly always digestive troubles, vomiting, diarrhea, and uremic symptoms. In addition to tuberculous involvement of the lungs these organs usually show distinct signs of congestion, often of edema. Tuberculous parenchymatous nephritis is distinguished from a similar nephritis due to other causes by the absence of the nervous symptoms of uremia, with the exception perchance of headache and of vascular hypertension and bruit de galop. The affection develops with considerable rapidity, and is not infrequently accompanied by renal changes characterized by intermittent hematuria.

Interstitial chronic nephritis of tuberculous patients develops particularly in those suffering from chronic and latent tuberculosis, and is characterized by polyuria, pollakuria, slight albuminuria, and retention of urea. Hypertension is exceptional. Absence of sweat and frequency of hematuria have been cited as especially characteristic symptoms. The nervous symptoms of uremia are rarely marked, though dyspnea as a pulmonary symptom of uremia is almost constant.

Acute nephritis of the tuberculous develops particularly in those who apparently are quite free from a tuberculous taint. It corresponds in type to influenza nephritis and is often attributed to a severe chill. Systemic depression, headache, fever, and lumbar pains are followed by a swollen face, edematous legs, general anasarca, or even pulmonary edema. The pulse is small, rapid, and of normal tension, thus forming a contrast to nephritis ordinarily observed. The urine is dense, turbid, usually contains blood and a large quantity of albumin, and is deficient in chlorides and urea, containing casts and leucocytes; it is passed in large

quantities. Polyuria with hypotension is particularly characteristic of the acute nephritis of the tuberculous, as is also the hematuria. In some cases the symptoms appear in the course of an active pulmonary tuberculosis. The affection is usually fatal from uremia and visceral edema. Sometimes it passes into a chronic stage. In these kidneys tuberculous infiltration is found. Under the term attenuated nephritis Tinel describes a class of affections characterized by polyuria, phosphaturia, and albuminuria. Albuminuria in these cases is often transitory, occurring with accesses of fever. There is a pretuberculous albuminuria described by Tissier, observed in young boys, intermittent, noted in the morning, accompanied by abundant hypertoxic, dense urine, associated with general symptoms of anemia and feebleness and emaciation. This persists for some time, and disappears when the first symptoms of pulmonary tuberculosis develop. These cases of attenuated nephritis characterized by albuminuria not infrequently pass blood due to congestive attacks.

As to the diagnosis of these forms of nephritis, it must be confessed that neither clinically nor anatomically can they be differentiated from the ordinary infectious forms of nephritis. In the absence of a preceding or concomitant demonstrable tuberculous lesion elsewhere, the diagnosis can scarcely be formulated. Nevertheless there are certain suggestive features of these affections, among which perhaps the vascular hypotension is the most striking, with the absence of cardiac hypertrophy, these being conditions quite opposed to those usually found in ordinary nephritis. Polyuria is paradoxical, since it is associated with hypotension. Hematuria is in these cases relatively frequent, whilst albumin is abundant, and the nervous symptoms of uremia are singularly lacking, contrasted with frequency of pulmonary and gastrointestinal symptoms. The association of nephritis with tuberculosis very gravely affects the prognosis.

As to treatment, there are some few cases of cure in acute unilateral nephritis, but this

is most exceptional. The affection is nearly always an essentially medical one. The treatment lies in proper nutrition and general hygiene, and particularly in suppression of medication, such as creosote, which is capable of producing a congestive action upon the kidney.

Tinel particularly cautions against being alarmed at the abundant albuminuria, stating that this in itself constitutes not the slightest danger, nor is it a therapeutic indication. Indeed, he considers that the ordinary milk diet is a grave error. Albumin in the urine has no importance except that it calls attention to the kidney and establishes the fact that the eliminating function of this organ is seriously disturbed.

As to the pathogenesis of the affection, it may be due either to toxic or to bacillary action. Tinel is inclined to the latter theory, though it is true that experimentally enormous doses of tuberculin can produce both acute and chronic changes in the kidney; small doses are practically without effect. It is well known that tuberculous patients habitually exhibit tubercle bacilli in the blood, kidneys, and urine, especially in the course of acute exacerbations.

Bernard and Salomon have demonstrated that the lesions produced in the kidneys are due to toxic substances adherent to the tuberculous bacilli, and have produced by bacillary injections both the epithelial and interstitial lesions described, but not the amyloid changes. They demonstrated that the tubercle bacilli, according to different conditions, either cause the specific, well-recognized lesions, highly characteristic in themselves, or may produce reactions purely inflammatory and such as follow the action of other infectious agents.

It is then apparent that the tubercle bacillus acts upon the kidney very much as other forms of infection, producing changes either by its toxins or by its direct presence, that the diagnosis must be based in the main upon the finding of this microörganism, and that the distinction between the surgical and medical kidney may be one exceedingly difficult to make.

WASSERMANN'S SERUM DIAGNOSIS IN SYPHILIS.

Two interesting communications on this subject appear in the *Berliner klinische Wochenschrift* of January 27, 1908, one by Kroner and the other by Fischer. Kroner tried the reaction in a group of cases which were certainly not specific, obtaining negative results in all. In the second group, probably not specific, the results were the same. In the third group, which was certainly specific, including in this list certain cases of tabes, 73 per cent—i.e., 22 out of 30—gave a positive reaction. One of these cases taken into the medical ward and exhibiting aortic insufficiency without preceding rheumatism, and luetic infection of eleven years before, showed on post-mortem examination no other sign of syphilis, and strengthened the common belief to the effect that an aortic insufficiency occurring in middle age without preceding infectious disease is always suggestive of syphilis. The same thing may be said of arteriosclerosis when it develops early. In two cases of luetic hemiplegia the result was positive, though it was negative in simple apoplexy. In six cases of paralysis and tabo-paralysis the result was positive in five; in thirteen cases the result was positive in nine. The results in cases of cerebral syphilis are not so satisfactory.

Kroner announces his conclusion that a negative finding as a result of the serum test of syphilis is of very minor value; that a positive reaction, however, proves according to the consensus of opinion of clinical investigators that the person from whom this positive reaction has been obtained either has or has had syphilis. The reaction bears no relation to either prognosis, nor, excepting from its purely diagnostic standpoint, is it of value so far as treatment is concerned.

Fischer as the result of a very extensive study of cases states without qualification that Wassermann's syphilis reaction is specific for syphilis; that it is found only in those who have had syphilis, never in those

who have not had the disease; that the reaction is serviceable as indicating a constitutional disease, and not as diagnosing a local lesion. Its importance is that it proves that the body either is or has been infected with syphilis; but it by no means proves that a given local lesion is in itself syphilitic.

Fischer agrees with Kroner to the effect that a negative finding is of no service, either from a diagnostic or prognostic standpoint.

Thus far studies of cases have not demonstrated that treatment has had any effect upon the reaction. In view of the lack of value of a negative finding it is highly important that consent to marriage should not be given on the basis of such a finding.

Wassermann's reaction is based on the use of the serum of apes artificially infected with syphilis, this serum being used for a complement link.

REPORTS ON THERAPEUTIC PROGRESS.

THE VALUE OF ATOXYL IN SLEEPING SICKNESS.

The two concluding reports which Professor Koch despatched from Uganda concerning the work of the German expedition for investigating sleeping sickness have recently been published. In the earlier report, dated April 25, 1907, Professor Koch admits that the improvement observed after the administration of atoxyl is, in many cases, of only temporary duration. The enlarged lymphatic glands disappear, and trypanosomes are no longer demonstrable in them, but after the atoxyl treatment has been stopped for some little time the patient ceases to make further progress, and in many cases becomes unmistakably worse. It is therefore clear that the parasites have not been completely eradicated from the body. To demonstrate their presence after the glands had cleared up, lumbar puncture might have been useful, but to this treatment the patients objected. Consequently the investigators had to fall back upon blood examination. By making as thick a film as possible and using an appropriate stain, they were able to obtain satisfactory information. Thus, in a series of 75 cases the first examination of the blood yielded positive results in 40 per cent, the second in an additional 20 per cent, and by the time the fifth examination had been made the trypanosomes had been discovered in almost every case; only in two instances was it necessary to proceed to a seventh and an

eighth examination. The searching of blood films was found a useful means of observing the effects of atoxyl administration. After a single injection of 0.5 gramme of atoxyl, trypanosomes were found in the blood, in one case, as early as the fifth day; but after giving two doses on successive days, the method usually employed, the blood remained free from the parasites for a very much longer time after the cessation of the treatment, and the longer and more regularly the treatment was continued the longer was the period before the parasites reappeared. In some cases the period of absence extended to three or four months, and in a smaller number of cases no reappearance had been observed up to the time of writing, in spite of frequently repeated blood examinations.

In the hope of securing better and more permanent results an attempt was made to push the treatment by increasing the dose to one gramme, and repeating the inoculations at intervals of seven or ten days. But as this treatment caused dangerous symptoms, and sometimes produced permanent blindness, it had to be abandoned. The investigators therefore returned to their original method, and administered two doses of 0.5 gramme, repeated at intervals of ten days. At the time of writing they had a considerable number of patients under observation who had been undergoing this treatment for some months. In none of them had trypanosomes been present, al-

though some hundreds of examinations had been made. Nor was there any indication that under long-continued treatment the trypanosomes had acquired an increased resistance against atoxyl, a phenomenon which Ehrlich has observed in experimental animals. In all the patients in whom the parasites reappeared after previous treatment with insufficient doses of atoxyl the administration of half-gramme doses caused a prompt and lasting disappearance of the organisms.

In addition to atoxyl a trial was given to other drugs found to be of therapeutic value for trypanosome infections in animal experiments. Arsenous acid, in the form of its sodium compound, was well borne by the patients even in large doses, and had an unmistakable action upon the trypanosomes; but its effect was much less powerful than that of atoxyl. We cannot, therefore, in Professor Koch's opinion, regard arsenous acid as a useful substitute for the latter drug. Other arsenical compounds tried were "nucleogen" and "arsenferratin," but the amount of arsenic in these preparations is small and they were found to exercise no marked influence upon the trypanosomes. Trial was also made of two chemical dyes, trypan-red and afridol-blue, but without results yielding any promise that these compounds would prove of therapeutic value in the human disease.

During their examinations of an extremely large number of blood films, the investigators incidentally came across other blood parasites, in addition to the trypanosomes. The commonest were filarial, which all proved to be specimens of *Filaria perstans*. The parasite is so common that there is hardly a single native of the islands or northwest coast of Victoria Nyanza who is free from it. No clinical symptoms definitely attributable to the filariæ could be observed in any of the cases, even where these organisms were present in large numbers; nor were any cases of elephantiasis found in the district. The parasites of malaria were also frequently met with; the percentage of cases showing these organisms varied from 20 to 50, according to the

neighborhood. While by far the greater number of the parasites were those of tropical malaria, quartan parasites were not uncommon, but tertian parasites were only encountered in a few cases. It was very noticeable that the malarial parasites were not influenced by atoxyl treatment to nearly so great an extent as the trypanosomes, although the former did show some diminution in numbers. Conversely, the trypanosomes were not influenced to any marked extent by quinine. A third class of organism sometimes accidentally found was the spirochæta of relapsing fever; but this was relatively rare, as the spirochæta was discovered in only 14 natives (11 adults and 3 children). In the adults clinical symptoms of the disease were either slight or absent, and the number of spirochætæ found in the blood was scanty; but the children manifested serious illness, and it was observed that their blood contained very large numbers of spirochætæ, quite as many, in fact, as are found in European relapsing fever.

The later report, dated September 5, announces that the investigations of possible substitutes for atoxyl were continued, but without the discovery of any alternative drug on which reliance could be placed. More interest attaches to the results obtained by the prolongation of the atoxyl treatment for many months. Professor Koch is now able to announce, on the basis of these recent investigations, that when a case of sleeping sickness is traced with atoxyl according to the method adopted by the German expedition, trypanosomes never make their appearance in the blood during the treatment, even when it is continued for as long as ten months. How much longer they would remain absent it must be left for the future to decide. In no case during the period of observation was there any indication that the trypanosomes acquired a tolerance for atoxyl, and therefore the capacity of the parasites to regain this resisting power under prolonged treatment, though observed in animal experiments, has not manifested itself as a practical difficulty in human therapeutics. "We are therefore

in a position," says Professor Koch, "to keep the blood of men suffering from trypanosomiasis free from the parasites for at least ten months, and thus we may prevent men from being a source of danger by rendering them incapable of spreading the disease through being a means of infection to *Glossinæ*."

In this respect alone atoxyl is a valuable agent for the suppression of sleeping sickness, though this is not the only advantage to be derived from it. Professor Koch admits that in a certain number of cases the trypanosomes reappear in the blood, sooner or later, after atoxyl treatment. "But in proportion to the length and the regularity of the treatment and the earliness of the stage in which the disease is met with, there is a corresponding diminution in the number of cases in which the trypanosomes are not completely eliminated by the atoxyl treatment. Consequently the best results are obtained in the mild infections, and we can indeed assert that the vast majority of these are permanently freed from trypanosomes by a curative treatment lasting from four to six months; moreover, since they do not exhibit the least clinical symptom of disease, they may be regarded as completely cured. With the severely infected the results are less favorable. Amongst these also there are not a few who become apparently restored to health by the atoxyl treatment, and, during the time we have been able to observe them, remain in this condition. But others, after the suspension of atoxyl, have relapsed, and many who considered themselves cured, and consequently abandoned the treatment prematurely, have succumbed."

That atoxyl is not quite the ideal specific Professor Koch frankly admits, and he expresses the hope that further investigation will endow us with some more efficacious agent. In the meantime, he points out, we have already obtained in this drug a valuable agent, which, when employed carefully, systematically, and for a prolonged period, is a most important aid to the suppression of sleeping sickness.

Meanwhile, additional testimony to the

value of the atoxyl-mercury method in the treatment of trypanosomiasis has recently been furnished by Professors Laveran and Thiroux of Paris, and Professor Jakimoff of St. Petersburg. Professors Laveran and Thiroux state that they have repeated the experiments of Moore, Nierenstein, and Todd upon guinea-pigs infected with surra, and find that the mixed treatment with atoxyl and mercury biniodide or bichloride has resulted in cures in three out of twelve guinea-pigs, whilst the treatment with atoxyl alone had no effect. They point out that mercury salts used alone have the great drawback that the efficacious dose approximates closely to the toxic dose, five of the animals out of twelve having died from the toxic effects; and that, further, the mercury salts produce local lesions, such as abscess and gangrene. They find, however, that the mixed treatment with atoxyl and mercury, if it does not always give satisfactory results, at any rate is superior to the treatment with atoxyl alone. Laveran also repeated the experiments of Loeffler and Ruhs, and has made experiments with other arsenical compounds. His observations demonstrate, as other observers have shown, that the compounds of arsenic have a remarkable effect upon trypanosomes. As the result of his observations he concludes that it is of great advantage in treatment to associate two arsenical preparations, such as atoxyl and the trisulphide of arsenic, but adds that many more observations are necessary to determine which is the best combination and which is the best method of administration.

The second communication has been sent from the Imperial Institute of Experimental Medicine of St. Petersburg by Professor Jakimoff to Dr. Nierenstein, who is at present engaged in carrying out investigations in the Biochemical Laboratory in the University of Liverpool upon the use of arsenic in the treatment of trypanosomiasis. Professor Jakimoff states that he has had excellent results from the atoxyl treatment of horses naturally infected by dourine. He is extending his observations, and will shortly be able to report on the treatment

by the atoxyl-mercury method of fifteen to twenty horses.—*British Medical Journal*, Dec. 14, 1907.

ECLAMPSIA TREATED BY VERATRUM AND MORPHINE.

DAVIS states in the *Southern California Practitioner* for December, 1907, that in his opinion if convulsions are imminent we should give chloroform as a temporary expedient. Give hypodermically, morphine 1-3 to 1-2 grain with tincture veratrum viride (from fresh root) 10 to 15 drops, according to the tension and force of the heart. The pulse will soon slow to 60, even 40, the respiration to 14 or less; if not, in half an hour repeat half of the original dose—the object being to lower arterial tension, annul the reflexes, and lessen the irritability of the nerve centers to such an extent that convulsions cannot occur. This will allow time for elimination of toxins which these drugs favor, besides which the tissue changes are lessened by the quietness and relaxation. Even if forcible delivery should be demanded—which may perhaps occur—it can be done with less shock, less of the anesthetic, and greater safety to the patient. In simple uremia avoid ether—it irritates the kidneys and raises blood-pressure. In eclampsia avoid as far as possible chloroform or chloral, they add to the danger. The condition of blood-pressure, of the kidneys, and of the liver should be our guide in the treatment of eclampsia.

THE TREATMENT OF THE GASTRIC NEUROSES.

CHENEY in the *American Journal of the Medical Sciences* for January, 1908, says that nervous dyspepsia constitutes the paradise of the fakir and the patent medicine man. It is the great frequency of "stomach trouble" that calls forth the immense crop of digestive tablets and elixirs, advertised to the public in street-cars, on bill-boards, in the newspapers, and on trees, cliffs, and hillsides. As a matter of fact, however, these much-vaunted reme-

dies do no more than relieve symptoms temporarily, and do not always do that; for the cure lies not so much in drugs as in reformation of the habits of life. The rational treatment of the gastric neuroses looks less to the outward manifestations than to the conditions and surroundings that have called them forth, and the details that must receive consideration are the following:

1. *The Underlying Neurasthenia.*—This in general calls for a return to "the simple life," with less stress and strain. Excesses of all kinds must be sought out and stopped, of whatever nature they may be—in study, in business, in society, in household duties, or in sexual affairs. Without such investigation and correction of our patient's occupations and surroundings, habits, and ambitions we cannot hope to accomplish much; for people with stomach trouble need intelligent directions as to rational living far more than they need prescriptions. No doubt the systematic rest-cure in a sanitarium, or travel, with the diversion and change of scene it gives, are valuable adjuncts to treatment; but for the majority they are simply out of the question because of limited means. On the other hand, it is always possible to insist upon regular hours for meals; regular hours for sleep; a daily bath; systematic outdoor exercise, even if it be no more than a walk to and from work or business; and the avoidance of introspection, self-examination, and self-pity. Such advice, however, is only too often utterly rejected by the ignorant, who have no use for any remedy that does not come out of a pill-box or a bottle.

2. *The Way Food is Taken.*—It has been shown how much this has to do with the production of dyspepsia. People must be taught that food eaten rapidly always digests slowly and often with distress; and inadequate chewing of food is one of the most common causes of stomach trouble. Again, rest for a short time after meals, before mental or bodily activity is resumed, is often all that is needed to make digestion go on unawares. Excitement, worry,

and annoyance while at table are a common source of trouble, and often their elimination suffices to overcome the long-standing digestive distress. All of these matters must be carefully explained to the patient, no matter how trivial they may seem; for upon such apparent trivialities success in treatment often hinges.

3. *Quality and Quantity of the Food.*—Habitual overeating is a frequent source of dyspepsia, for continued overwork induces exhaustion in the stomach as in the brain or any other organ. Hence, reduction in the amount of food taken is in some cases the most valuable therapeutic resource. Consciousness of this fact has recently led to the adoption of certain popular fads for the cure of dyspepsia, such as the "no-breakfast" cure or the "no-lunch" cure. They are not altogether fads, though the mistake made is in adopting them promiscuously without previous investigation of the true nature of the "stomach trouble."

Habitual overindulgence in certain kinds of food is also a matter for investigation and correction. Any of the foodstuffs may thus cause offence if repeatedly taken to excess. It may be the starches, the sugars, the fats, or the proteids; it may be coffee, tea, or alcohol; it may be acids or condiments. The particular kind of food that is being taken too freely can best be found by questioning the patient regarding his habits and his preferences; and such questioning should form a part of our routine examination as a preliminary to advice.

But our best guide as to the quantity and quality of the diet to be prescribed is furnished by the analysis of the test meal, for this tells us what particular function is at fault and how it is deranged. If the condition proves to be one of hyperacidity, the essential feature of which "consists in an abnormal irritability of the secretory apparatus of the stomach during its time of labor," then food should not be given too often and not of such kinds as especially stimulate secretion. Three meals a day are usually enough, and a mixed diet has proved most useful. Fats, cream, and butter; well-done meats of all kinds; milk and

cocoa; vegetables like boiled potatoes, cabbage, spinach, turnips, and carrots; sugars and sweets—these are the foods especially indicated; while spiced, salty, and sour articles of diet, coffee and alcoholic and carbonated drinks, ordinary breadstuffs, and rare meats must be excluded.

If the condition is found to be one of subacidity, exactly the opposite course is indicated. The food should be taken in small quantities at short intervals, for there is no stimulation to secretion equal to the act of eating. Meats cooked rare; breadstuffs, crackers, zwieback, and toast; condiments, spices, salt foods; alcohol in moderation and carbonated waters; animal broths and meat extracts—these are the foods that should be given; while fats, sweets, and coarse vegetables are contraindicated and should be omitted. In subacidity especially the value of attractive preparation of food and of thorough mastication as stimulants to secretion must be impressed upon the patient.

If there is faulty motility, as found by food retention and delay in emptying the stomach, then the quantity at each meal must be small, especially the fluids. The food must be finely divided—meat in a minced or scraped condition, vegetables in the form of purées, and cereals in gruels. Crackers, crisp bread, zwieback, and toast must be thoroughly ground by the teeth, and all coarse foods with much bulky residue—as beans, corn, spinach, etc.—must be avoided.

4. *Drugs.*—The use of these is constantly necessary to combat disagreeable symptoms, but it must be understood that they are only adjuncts and not the main resource in the treatment of the gastric neuroses. The useful ones can best be considered under the head of each important type of neurosis:

Hyperacidity. In hyperacidity drugs help us (a) by checking gastric secretion and (b) by neutralizing excessive secretion. To check secretion our best drug is belladonna, given in doses of $\frac{1}{4}$ grain of the extract half an hour before each meal, the efficacy of which has been proved both ex-

perimentally and clinically. To neutralize excessive acidity, bicarbonate of sodium is the popular remedy, and a useful one; but a formula learned originally from Stockton has been used in the clinic of Cooper Medical College for a number of years past, with most satisfactory results. It consists of cerium oxalate, 2 drachms; bismuth subnitrate, 4 drachms; and the light carbonate of magnesium, 1 ounce; of which powder one teaspoonful is given one or two hours after meals, when the symptoms of excessive acidity appear.

Subacidity. In subacidity drugs come to our aid (a) by stimulating secretion, and (b) by supplementing deficient secretion. To stimulate secretion the bitter tonics have proved most satisfactory; and of these we have employed with greatest frequency the tincture of nux vomica, in doses of 10 to 30 drops before each meal. To supplement deficient secretion dilute hydrochloric acid in doses of 10 to 30 drops, well diluted, is employed after each meal.

Faulty motility. For this neurosis, strychnine has been found the most reliable drug, given before or after meals, in doses of 1/40 to 1/20 grain. As disturbances of motility are usually found combined with secretory disturbances, the state of the secretion must also be carefully considered.

Hyperesthesia. In cases in which symptoms of dyspepsia persist in spite of normal analyses and negative findings as regards disturbed motility, the writer has had excellent results in his clinic from sodium bromide and valerian, given in the following formula: Sodium bromide, 20 to 30 grains; elixir of the valerianate of ammonium, 1 drachm. Such dose is given in water after each meal, continued for several weeks or a month.

5. Physical Treatment.—The various physical methods suggested for influencing secretion, such as intragastric galvanization or faradization, intragastric douches and sprays with various medicated solutions, or abdominal packs and hydrotherapeutic applications, have never seemed to the author to yield satisfactory results. Even the value of gastric lavage is probably overes-

timated, and in the opinion of the author it should not be employed as a routine measure day after day. It has its value in the relief of symptoms, to remove hyperacid gastric contents, to stop distress, or to remove retained or fermenting material when motility is deficient; but it is doubtful whether it can influence the secretion of the stomach in any way. All of these measures do harm by keeping the patient's attention directed to the stomach and reminding him of its delinquencies; and in the neuroses this is a distinct hindrance to recovery.

ACUTE PULMONARY EDEMA.

LEONARD WILLIAMS in the *Lancet* of December 7, 1907, well says that as to the treatment which is proper in cases of acute pulmonary edema there is considerable diversity of opinion. Reisman says that the best results are obtained by venesection. Hewlett, however, who employed it in one case in which "the cyanosis was intense and the pulse tension high," was disappointed with the result. It did not relieve the patient at all, and she recovered from this attack much more slowly and was weaker than after any of the others. The remedy which he recommends, and in which he expresses great confidence, is the subcutaneous injection of a quarter of a grain of morphine, a measure of which Lindsay Steven disapproves.

Lissaman, who used alcohol, nitroglycerin, and sedative drugs in vain, was moved to try the effect of the inhalation of small quantities of chloroform. The result was so successful that he discarded all other remedies, and both he and his patient learned to place the utmost reliance upon this form of treatment. Against this testimony must be set that of Victor Pedersen, of New York, who relates a case in which the symptoms developed immediately after, and seemingly as the result of, chloroform anesthesia. This author speaks highly of extensive and repeated dry-cupping, an expedient in favor of which Reisman also expresses himself strongly.

Leonard Williams's own case was treated

quite ineffectually by orthodox emergency methods. Had he to deal with it again he asserts he would act differently. More than once when he was watching the man's agony the possible utility of venesection crossed his mind, but he was deterred from having recourse to it by the existence of the pronounced aortic regurgitation to which he had been listening a few minutes before. From what he has seen of the literature on the subject he is disposed to think that this little operation might have saved the patient's life.

THE TREATMENT OF NEURASTHENIA.

In the *British Medical Journal* of December 28, 1907, DRUMMOND tells us that given a careful and correct diagnosis, we have next to consider the treatment to be adopted. The writer is impelled to say at the outset that a personal factor enters into the successful treatment of neurasthenia that cannot be overlooked nor minimized. It calls for a combination of insight, sympathy, and firmness that all do not equally possess; and even those who do possess the power to rouse or restore the patient's confidence in his ability to combat his symptoms are not always able to exercise it with the same degree of success. In saying this the author is not referring to the use of any such agency as hypnotism or suggestion, for that phase of the matter lies outside his subject—he refers to ordinary intercourse between doctor and patient.

Next to the diagnosis based on positive and secure grounds must be placed courage to speak and act firmly, begotten of knowledge, and an eager desire to help our patient—and, it may be added, confidence that the professional brother next door will say the same thing if appealed to by some dissatisfied patient who wants a definite name for his malady.

We must first recognize that what we have to treat is not a group of symptoms, but a specific morbid state of the mind and nervous system. Therefore, as the successful treatment of neurasthenia does not lie in the treatment of symptoms, but rather in

the management and correction of a mental fault, it follows that drugs are not of great assistance, though as tonics, etc., they have their place, and cannot therefore be entirely ignored. There are some who will argue that it is good practice to give neurasthenic symptoms a name based upon the locality to which they are referred, such as "liver," "gastric catarrh," "floating kidney," "displacement of uterus," "weakness of heart," and think it wise to treat these supposed ailments with drugs, etc., in the hope that the patient may eventually be persuaded that a cure has taken place. That is, drugs and other treatment are employed as an indirect method of suggestion, with a cheerful acceptance of the risk that they may do actual harm. This Drummond believes to be most unsound practice, and he feels that we cannot too strongly set our faces against it.

The treatment that is attended by the greatest success, indeed the only rational line of treatment, consists of an honest and straightforward statement to the patient, dealing with the facts of the case—a statement that enters fully into its pathology and touches lightly upon the symptoms; a statement that, by its very firmness, disinterestedness, and kindness, wins the confidence of the patient, and encourages him to think better of himself, and to make a real effort to rise above his trouble and ignore himself. The power to help and encourage our nervous invalids undoubtedly increases with experience and practice; and the sooner we begin to talk rationally to them the sooner will we acquire the art of curing them. Many a patient has returned to a doctor, it may be months or years after his first visit, the chief factor of which was a plain talk, and when asked as to his state and how the prescription suited him, has replied: "Oh, I am much better; but it was not the medicine that did me good, but what you said."

This is what may be done, assuming that the patients seek advice at the beginning of the illness, before the neurasthenic symptoms are confirmed, and at a time when they are amenable to treatment, by

the simple method of establishing confidence on the part of the patients in themselves and in their own ability to dominate and control the situation. The course becomes more difficult as time advances, and especially if a disquieting opinion has been offered and the patient's attention drawn by diagnosis to some definite lesion. Catch-words such as "catarrh of the stomach," "twist of the womb," stick and serve as a kind of rational peg on which to hang an entirely mythical string of non-existent symptoms. As a rule such a diagnosis is a random shot without meaning. The author thinks we are all too prone to give nervous symptoms a name—any name, alas, but the real one!

When the case has become confirmed, and especially when the surroundings are unfavorable and unhelpful, our difficulties are necessarily increased, and they become still greater when the patient's health has been lowered by sleeplessness, anemia, dyspepsia, and so on. But even then a true diagnosis and sound advice will do much, coupled with suitable remedies and change of air and scene; but the key to success still lies in the proper management of the patient's mental state. To grapple with this and the various causal factors at work requires all our tact, courage, and patience.

Many cases will, however, defy this rational line of treatment, even at the hands of the most experienced, when attempted at home. Adverse circumstances are too strong for them, and the doctor's efforts are more than counterbalanced by influences outside his control. It is then that isolation proves so valuable, with or without a course of the so-called Weir Mitchell treatment.

Drummond feels that in bringing to a close his remarks upon the treatment of neurasthenia he cannot do better than to give a brief account of his own experience, independently worked out and extending now over many years, of the Weir Mitchell treatment, which goes to show that the point of chief importance is mental treatment administered under the most favorable conditions, of which the first essential is isolation under the doctor's control. The

mental treatment is, in fact, a sort of education with encouragement. The plan adopted should not be too rigid: each case needs to be separately considered and treated on its own merits—one will require stern insistence, another gentle coaxing. By countless varying methods the treatment is always directed to the one end of leading the patient away from the constricted, self-centered attitude of mind in which attention is absorbed in narrow personal feelings, and substituting for this a roused or restored interest in wider affairs of life, which will in turn endow him with a new and larger and perfectly healthy self. To this main object the various helps of rest, overfeeding, "passive exercise" or massage, electricity, etc., are, when used at all, regarded only as subordinate accessories. And the author adds, in conclusion, that the number of lasting cures secured in this way year by year strengthens his conviction that the theory is true and the practice sound.

THE GENERAL TREATMENT OF SKIN DISEASES.

In a post-graduate lecture MAX JOSEPH states that he regards it of utmost importance for the medical practitioner to master the elements of the general treatment of skin diseases, in order to be able to employ the various means successfully in individual cases. In some introductory observations he says that while water is a commodity which every person uses in the interest not only of cleanliness but also of comfort, it is necessary to limit its use or even to forbid it altogether in the treatment of some acute conditions, especially acute eczema. On the other hand, washing and baths are of great value in removing scales and concretions of the skin, and he instances psoriasis as a type of condition in which baths enable the scales to be removed so that healing applications may be employed. He is inclined to regard the value often attached to medicated baths as exaggerated, though benefit is at times derived either as the result of the mental effect or

by their influence on the metabolism of the organism. Too much hope must not be placed in them, and it is immaterial whether chamomile, elder, peppermint, sage, thyme, valerian, or calamus be added. Brine, sulphur, and carbonic acid baths are useful in certain cases.

Of soaps, he says that since all are combinations of fatty acids and alkalies, the latter being in excess, the effect is always to soften and remove the epidermis to a slight extent. That this must be bad for such conditions as eczema, in which every effort ought to be made to regenerate the epidermis, is certain. Freshly-prepared superfatted soaps would not have this property, and therefore may be useful in such cases, but he warns against the use of superfatted soaps which have been stored for some time. For cosmetic purposes he recommends a mixture of almond oil (5 per cent) with ordinary pure white household soap.

Ointments are the most important preparations which the dermatologist has at his disposal, and Max Joseph points out that the chances of success depend largely on the proper choice of the ingredients, and on the recognition of the stage in which they will act beneficially. Thus while tar may cure certain conditions, it will do definite harm if applied too early. It is further necessary to write prescriptions exactly, so that unpleasant and unexpected results do not occur from an indifferently made ointment. He gives one or two examples of how he writes his prescriptions. Erasmus Wilson's zinc-benzoic acid mixture is prescribed as follows: Tinct. benzoïn 15 grammes, evaporate to 7.5 grammes, add zinci oxidi 3 grammes, and unguentum leniens ad 100 grammes.

Pastes fulfil a very important place. They have the property of absorbing the secretion of the surface. As types of paste he cites the following indifferent zinc paste:

℞ Zinci oxid.,
Amyli, āā 25 grammes;
Vaselin. americanus alb. opt., 50 grammes.

The paste is applied in a layer over the

affected part and covered with gauze and a muslin bandage; a little linseed oil applied on a piece of wool suffices to remove the paste. A cooling paste used by Unna can be recommended:

℞ Ol. lini,
Aq. calcis, āā 30 grammes;
Zinci oxid.,
Calc. carb. prec., āā 20 grammes.
S.: Pasta zinci mollis.

Ointments and pastes require a protective dressing, which is at times a disadvantage. Unna therefore introduced a so-called "size" (Leim), which can be applied only to absolutely dry skin, but which does not require any protection:

℞ Zinci oxid.,
Gelatin. alb., āā 30 grammes;
Glycerini, 50 grammes;
Aq. destil., 90 grammes.

This solid mass is rendered fluid over a water-bath, and painted on to the area with a soft paint-brush. A little powder is then applied over the surface. Dieterich's glutectone has a similar function. Pick's drying liniment, which may be used under similar conditions, is made of basserin (gum tragacanth) 5 parts, glycerin 2 parts, and water 100 parts; it is applied in a thin layer, and dries as a thin skin. In inflammatory conditions—for example, pityriasis rosea—medicaments can be added to the liniment:

℞ Ammonii sulpho-ichthyolici, 3 grammes;
Linimentum exsiccans, q. s. ad 50 grammes.

Joseph then briefly describes the general principles of the treatment of skin diseases. In dealing with acute cutaneous catarrhs, he says that as long as inflammatory signs are present, and especially as long as there is any "weeping," antiphlogistic means should be employed. A weak solution of aluminum acetate applied every half-hour during the daytime yields good results; when this fails a lotion of 10 grammes of resorcin to ½ liter of water may be tried. At night zinc and starch powder relieves the inflammatory symptoms. As soon as the surface is dry, astringent ointments may be applied, and he instances Lassar's oleum zinci as very suitable for this purpose:

- ℞ Zinci oxid. puriss., 60 grammes;
Ol. olivarium, 40 grammes.

When all traces of weeping have disappeared and the inflammation is considerably improved, the regeneration of the epidermis must be stimulated, and the itching allayed. The so-called keratoplastic substances, of which tar is the best, fulfil both purposes. The oil of cade also is useful. When the epidermis is thickened, it may be necessary to use keratolytic substances. The chief use of these is in chronic eczema with a tendency to the formation of crusts. Lassar's salicylic paste serves as a good example:

- ℞ Acid. salicyl., 2 grammes;
Zinci oxid.,
Amyl., āā 24 grammes;
Vaselin. americ. alb., 50 grammes.

In obstinate cases 10-per-cent salicylic plasters, or from 30- to 50-per-cent salicylic acid plaster bandages, may be used. In acne and other conditions, when it is required to remove epidermis to empty the sweat and sebaceous glands, naphthol or resorcin does good:

- ℞ Naphthol., 10 grammes;
Sulphuris precipit., 50 grammes;
Vaselin. flav.,
Saponis virid., āā 20 grammes.

—*British Medical Journal*, Dec. 21, 1907.

SILVER NITRATE IN GASTRIC DISEASES.

WEINSTEIN writes in the *New York Medical Journal* of December 28, 1907, that his observations lead him to recommend the use of silver nitrate in all irritative conditions of the gastric mucosa characterized by increased secretion, hyperacidity of the gastric juice, nausea, vomiting, and pain. In gastric neuroses, no matter how closely the symptoms resemble those of organic disease of the stomach, this drug exerts no influence whatever on the symptoms. It is therefore all-important in its application to exclude neurotic conditions of the stomach, which, the author admits, at times is almost impossible; for there are very few diseases of the alimentary canal in

which nervous phenomena do not play an important part.

Hyperchlorhydria is a symptom of various diseases, but it also exists as an entity in those conditions of the stomach in which the gastric mucosa is constantly being irritated. The irritation may be due to faulty mastication and insufficient insalivation of the food, uncleanly condition of the mouth and teeth, excessive eating and drinking ice-cold drinks, abuse of alcoholic beverages, highly seasoned foods, spices, etc. Silver nitrate will promptly relieve the distressing symptoms of this condition, but if the causative factors continue in operation it is evident that the hyperchlorhydria will persist in spite of treatment and will ultimately result in an inflammatory state of the mucosa. It is apparent that the proper treatment of this disease consists in the removal of the cause and in the institution of a non-irritating light diet for a period coincident with the return to normal of the irritated mucosa. At this juncture it may not be amiss to call attention to the futility of the contention of various authorities relative to the diet best suited to this condition. It is, in the author's opinion, not the proteid or the lactovegetable diet that influences the course of the disease, but the removal of the irritating factor and the guarding of the stomach against abuse. The part played by silver nitrate is not merely that of a symptomatic remedy in that it relieves the symptoms, but also as an aid toward a permanent cure by virtue of its constricting effect on the vessels of the mucous membrane of the stomach.

As a symptom hyperchlorhydria frequently occurs in chlorosis, in various diseases of the liver, in cholelithiasis, cholecystitis, and in the early stages of nephritis. Reflexly it occurs in constipation, especially of the spastic type, and in mucous colitis. Treatment should be directed to the primary disease, and the curability of the hyperchlorhydria necessarily depends upon the curability of the disease of which it is a symptom. For the alleviation of the symptoms, however, silver nitrate should be employed. The removal of the distressing

symptoms of an accompanying hyperchlorhydria in any disease not only adds to the patient's comfort, but also improves his digestion owing to the return to normal of the secretory and motor functions of the stomach. His nutrition is thereby furthered, thus contributing indirectly to his ultimate recovery.

The various gastric neuroses may or may not be accompanied by a hyperchlorhydria. The secretory disturbances manifest themselves in such extremes as to present at one time a high degree of acidity and at another time a complete absence of acidity of the gastric juice. The gastric symptoms vary with the state of the secretion, and during the hyperacid state the symptoms resemble very closely those of hyperchlorhydria. Under these conditions silver nitrate is of no service whatever; there being no congestion of the mucosa, the astringent action of this drug is not indicated. The variability of the secretory function is due to vasomotor disturbances, and treatment must be directed to the nervous system.

In chlorotic individuals with a general myasthenia, the gastric atony is often complicated by a hyperchlorhydria. Here again silver nitrate is a most useful remedy if supplemented by treatment directed to the general weakened condition of the patient. It appears to the author that the diet is a most important feature in the treatment of these cases. Gastric lavage will be found superfluous if attention be directed to feeding the patient properly. The writer usually advises in these cases a vegetable and fatty diet of solid or semisolid consistency, in small quantities at frequent intervals, so as not to overtax the musculature of the stomach. Of liquid he allows as little as is consistent with comfort to the patient. Massage, electricity, a plentiful supply of fresh air, and such drugs as iron, arsenic, strychnine, and ergot, are all to be employed in the treatment of this disease.

In benign pyloric stenosis with retention of the gastric contents decomposition of the retained ingesta takes place. The gastric mucosa is thereby irritated, resulting

in hypersecretion and the development of sarcinæ and yeast cells. The most effective symptomatic treatment he has found to be a thorough washing of the stomach followed by silver nitrate internally. The relief is necessarily but temporary, the establishment of proper drainage being the only correct treatment in these cases. Fissures at the pyloric orifice are frequently productive of the same results by spasmodic contraction of the pylorus. Gastric lavage, followed by the internal administration of silver nitrate, a non-irritating diet, and olive oil on an empty stomach, has never failed, in the limited experience of the author with this disease, to effect a cure.

For the relief of pain in gastric ulcer, whether acute or chronic, silver nitrate is superior to any other drug. The distressing heartburn, sour eructations, headache, and constipation that usually accompany gastric ulcer are also promptly relieved.

It is unnecessary to comment upon the importance of a strict diet in this disease. In ambulatory cases the author puts the patient on a liquid diet consisting of two quarts of milk, six soft-boiled eggs, a quarter to half a pound of unsalted butter, well-cooked and strained cereals, strained vegetable soup, half a pint of cream, custard, gelatin, and, where practicable, olive oil. This diet is usually well borne and can be kept up for several weeks, if deemed advisable, without the loss of weight. He then gradually adds solid food in the form of zwieback, crackers, toasted bread, spring chicken, calf's brain, mashed potatoes, and other vegetables. In severer forms of the disease, in which food is not tolerated by the stomach, the patient is to be put to bed, and rectal alimentation instituted. Silver nitrate may, however, be administered by mouth, as it is always well borne by the stomach. Subsequent treatment is largely individual and differs but little from that of the milder form of the disease. In a case of severe hemorrhage from gastric ulcer in which the patient suffered intensely from sour eructations and laryngeal spasm,

silver nitrate relieved both of these symptoms after the second dose.

In chronic acid gastritis, silver nitrate acts in the same manner as it does in other forms of hyperacidity of the gastric juice.

In alcoholic gastritis during the hyperacid stage this drug should be employed for the same reason. It is, however, important in all forms of gastritis to wash the stomach thoroughly before the drug is administered. The diet should be light and non-irritating and of semisolid consistency.

In other forms of gastritis the experience of the author with this drug is too limited to allow of an authoritative opinion as to its efficiency. In one case of an acid mucous gastritis, in which all other drugs had failed, silver nitrate had a most excellent effect.

The author usually administers the drug in solution in doses of one-quarter to one-half of a grain three times a day on an empty stomach. For half an hour after its administration he does not allow any food or drink. It is hardly ever necessary to continue its employment for a longer period than three weeks, although in rebellious cases it may be employed for a month without danger of producing argyria. In those cases in which the intestines react unfavorably its use is to be discontinued at once.

A STUDY OF SOUR MILKS.

PIFFARD in an article on this subject in the *New York Medical Journal* of January 4, 1908, concludes:

1. The assumption that sour milk is a menace to health is wholly without scientific foundation, and is opposed to common experience in many parts of the world during a period covering thousands of years.

2. Sour milk is wholesome and nutritious, and is probably more easily digested than sweet milk.

3. In certain derangements of health it is an important direct remedial agent.

4. The present most available souring agents are special bacteria in common use among certain European and Asiatic peoples.

5. The essential organisms as they reach us are frequently contaminated with unessential and possibly undesirable organisms.

6. The proprietary sour milk should be prepared with laboratory pure (streptococci-free) cultures of the desired organisms.

7. The proper organisms prepared in some suitable liquid or solid medium can be readily standardized and administered direct.

8. Whether the bacilli derived from kefir are to be preferred to those from matzoon or *vice versa* cannot at present be dogmatically asserted.

9. The organisms when placed on the market should be under their own proper scientific names and not under a proprietary or trade name. The guarantee behind them should be the reputation of the concern that prepares them.

10. They should be advertised to the profession only and not to the public.

11. It is more than possible that some domestic organism may be isolated in the future that will prove to be more desirable than those of foreign origin.

THERAPEUTIC OPTIMISM.

At the recent meeting of the Medical Society of the State of New York Dr. A. JACOBI delivered an address entitled "Nihilism and Drugs" (*New York State Journal of Medicine*, February, 1908), in which he sounds a note of optimism most cheerful to those who believe that the mission of medicine is to relieve suffering and save life, and that the study of pathology is only a means to an end, and not the sum and substance of medical endeavor. In his opening the speaker referred to Osler's recent address to London students, in which he warned them to "be skeptical of the pharmacopœia," and said that "he is the best doctor who knows the worthlessness of most drugs." Dr. Jacobi charitably endeavored to explain away these smart sayings by interpreting "skeptical" in the sense of "examine and test," but we suspect he knew, and knew that his hearers knew, that the Regius Pro-

fessor meant just what he said, and that he is still the incorrigible nihilist who continues to lay the blame upon drugs for his inability to use them.

Expectant treatment, Dr. Jacobi said, is too often a compound of indolence and ignorance, and he cited numerous illustrative cases where patients who had been condemned to death or a protracted invalidism were saved and restored to health by timely medication. "Expectant treatment! Verily, I tell you, it is malpractice, which shall be punished on account of neglecting what nature and sound therapeutics furnish. . . . Expectant treatment is no treatment. It is the sin of omission which not infrequently rises to the dignity of a crime." These words are the words of wisdom and truth; they should be printed on tablets in letters of gold to remind every practitioner of his duty whenever he is tempted to shirk it. Disease, whether "self-limited" or unlimited, is the enemy which the physician is sworn to attack, and he is a coward or a weakling who skulks in his tent while the enemy is gaining force.

There is a good old-fashioned ring to this address of Dr. Jacobi which will bring cheer and encouragement to the practitioner who has gone his way treating the sick as he was taught in his early days of long ago, giving homely drugs and plenty of them, when need there was, but stealthily almost lest he should incur the ridicule of his younger brethren indoctrinated with therapeutic skepticism and scornful of the "unscientific" methods of the past. Digitalis, strophanthus, sparteine, camphor, caffeine, strychnine, ammonia, and musk in pneumonia; extract of belladonna in doses of half a grain to a child of four years suffering from enuresis; one-fourth of a grain a day in divided doses of corrosive sublimate to an infant with diphtheria; daily doses of two drachms of iodide of potassium to a baby with tuberculous meningitis; opium in doses of one-fortieth to one-thirtieth of a grain every two hours to a child a year old suffering from enteritis; emetics, purges—these are some of the drugs which the speaker had the courage to declare he used when

he met the indications for them, and used with good effect. The prejudice against polypharmacy—shotgun prescribing, the one-drug man or the no-drug man calls it—was also combated. "There are those," Dr. Jacobi said, "who dislike a prescription blank filled with three or four remedies, but there are also those who dislike the looks of a patient whose many ailments should not have to wait for the gradual and slowly conservative administration of drugs that could as well act simultaneously and conjointly, and better when conjointly. . . . The disease of an adult has a long anamnesis and the residue of previous illness. By insisting upon giving a single remedy you may care for and cure the last affection, and let your patient slip away from you under expectant treatment."

Does the man who preaches nihilism ever think of the consequences of his teaching? Does he ever think that the men, his equals at least in intelligence and honesty, who believe in the power of drugs and who claim to get good results from their use of them, may possibly be right? Does he ever admit to himself, in signing his death certificates, that his failure may be due to ignorance and a lack of ability to use the tools of his calling? Drugs may not always produce the results expected; they may, when injudiciously employed, even do harm; there are few specifics, and these few do not always cure. But they are potent weapons, in skilled hands, in the combat with disease, and the man who despises them or knows not how to use them has no right to call himself a physician or to attempt to practice medicine. There is a field for his abilities in the laboratory, but he should take his hands off the sick, and not abuse the trust they place in him by abandoning them to the processes of nature, which are often misdirected. Dr. Jacobi's address is an eloquent protest against this baleful doctrine of the inefficiency of drugs. It will probably fail to break down the conceit of the therapeutic nihilist—may his shadow grow less—but we commend its careful study to the young practitioner whose first unsuccessful essays in treatment may tempt

him to regard all drugs as useless and the materia medica as a relic of superstition.—*Medical Record*, March 14, 1908.

NIHILISM AND DRUGS.

In the course of an address published in the *New York State Journal of Medicine* of February, 1908, JACOBI asks the question, What, as a general rule, are the doses of medicine? Nothing is easier than to be misguided. Minimum and maximum doses are forced upon us in text-books and pharmacopœias with refreshing coolness. Hundreds of times, the writer states, he has been called up by a druggist who informs him that he has been told the dose of sparteine is one-quarter of a grain. He replies that may be the dose for the man who is to be drugged with a placebo, but that his patient requires a one-half- or one-grain dose six or eight times a day. The average dose of fluid extract of digitalis is set down as one minim; those cases which require ten may get well with ten, but surely die with one.

Dosage depends upon sex, age, body weight, the stage of sickness or convalescence, on high or low temperatures, on the condition of the absorbing tissues, on the locality of application, on the amount of blood circulating in the vessels, on the presence or absence of sepsis. The text-books tell us that a nursling must have a fifteenth or a twentieth of the dose of an adult in proportion to its body weight.

The author does not insist upon giving too large doses of drugs, but at least he does not gloat over big doses of expectancy. He tries to give proper doses, for instance, of corrosive sublimate in diphtheria and some other forms of sepsis. One thing, he asserts, he is sure of, as his experience in a thousand observed cases has taught him these thirty years—that a baby of six months will take from one-half to one milligramme of corrosive sublimate every hour, diluted in ten thousand times its quantity of water, and continue sixteen such doses daily for several days, and not be punished with stomatitis, gingivitis, gastritis, or enteritis. At that rate the baby will take one-

fourth part of a grain of corrosive sublimate, or more, for several days in succession. The worst part of that practice is that now and then a man and brother will throw up his hands in horror. But the author asserts he has met with horror, wonder, and acceptance successively, many times. Its best part is that it has helped him and many friends and pupils in curing many cases of diphtheria—particularly the laryngeal form.

A small dose of morphine administered under the skin just over a pleuritic or peritonitic pain, acts much more quickly and effectively than the same dose in the arm. The latter locality is quite easy for a lazy nurse, but for sound reasons an abomination to the patient. It acts five times more quickly and satisfactorily than when given internally, much better than in suppositories whose absorption depends on the condition of the rectum, filled with feces, beset with dysenteric or other ulcerations, or merely catarrhal. A soluble tablet of a tenth of a grain or a few drops of Magendie's solution, more or less, sucked down without water, is absorbed immediately in the pharynx, and soothes the racking attacks of cough; or when taken a few minutes before a meal, facilitates the gliding of food over an ulcerated tubercular throat, or prevents the vomiting of pregnancy.

During the first six weeks of his life the newly-born has an indolent nervous system. Its reflex actions are defective (Soltmann). That is why reflex convulsions recurring soon after birth are almost unheard of, while those depending on intracranial lesions and hemorrhages are very frequent; and why larger doses of strychnine are required for a spastic effect in the newly-born than later. Atropine, quinine, and nicotine are also required in comparatively large doses in the newly-born animal, and to the same extent opium. And still the books and essays that copy from each other, decade in and decade out, preach the prejudice that opium is incompatible with infancy. Nothing is a more untrue or curious statement. Opium is not to be a daily food, but in a majority of cases of enteritis a baby a

year old may take one-thirtieth or one-fortieth of a grain every two hours. The relative dose given to an adult (15 to 20 times as much) would not be so well tolerated. We read of poison cases it is true, but in fifty-four years of a New York practice the author has not seen a single case of opium poisoning of his own making in ever so many thousands of cases of enteritis. Cases of death occur from carelessness or mistakes, very rarely from idiosyncrasy. Such occurrences there are, however. Once, he asserts, he sat up with a gigantic adult to whom he had given a single dose of five grains of iodide of potassium, nursing his pharyngeal and laryngeal edema. On the other hand, the same drug is given in daily doses of two drachms to a baby with tubercular meningitis, or the same or a double dose to a syphilitic adult.

As the dangers of opium in children's diseases are overestimated, so the effect of belladonna is not obtained in daily practice on account of the smallness of the doses generally administered. Of the official extract of belladonna an adult may not take more than a grain daily without a dilatation of the pupils and dryness of the throat. A nightly dose of one-half of a grain, or a good deal more, however, is required and easily tolerated by a child of four years suffering from enuresis; and the effective dose in whooping-cough of belladonna is measured by its flushing the cheek within half an hour, and not by any book.

The doses of strychnine are controlled by other nervous disturbances. When the splanchnic nerves are injured, or paralyzed by shock, the vast dilatation of the visceral blood-vessels is controlled or obviated by large doses of strychnine only. In the paralysis of chronic poliomyelitis, the internal administration of strychnine is useless; it will act only in big doses and only when injected into a muscle once every day or two days.

The action of strychnine depends to a great extent on the condition of the blood, viz., anemia and sepsis. Experience teaches what experiments have demonstrated. The resistance of fishes to the action of curare

was found (by Welker) to depend on the small quantity of their blood, which amounts to from one-fifty-third to one-ninety-third of their body weight; while in the child there is one weight of blood to nineteen, and in the adult one to thirteen, parts of body weight. Ill-fed, anemic, and septic persons, old or young, require big doses of strychnine, in accordance with experiments which prove that a depleted frog demands larger doses of strychnine than those not so depleted, and the depleted side of a frog more than the other side. It is mainly a slow convalescence in man, and thoroughly septic cases of scarlatina, diphtheria, typhoid and puerperal fever, that should be favored with large doses.

SOME EXPERIENCES OF THE OPHTHALMO-REACTION OF CALMETTE.

Boyd contributes a paper on this subject to the *Scottish Medical and Surgical Journal* for December, 1907. As he well says, the diagnosis of obscure tuberculosis is often a point of the greatest importance to the patient and to the practitioner. Much can be done by careful observation of weight, temperature, and the opsonic index; the use of tuberculin may help, but the necessity of confinement to bed and the frequent determination of the opsonic index stand in the way of its use by the general practitioner.

Calmette has recently given us a method of arriving at an accurate diagnosis which, if it stands the test of time, as it promises to do, should, on account of its extreme simplicity, be of the utmost value in practice.

Calmette has shown that if a drop of a one-per-cent watery solution of tuberculin be placed in the eye of a tuberculous person a definite local reaction follows. Within a few hours there is congestion of the conjunctiva, which passes into a definite conjunctivitis. The pupil is dilated. The maximum reaction appears within about twelve hours, and all traces of inflammation disappear in a few days. The reaction causes the patient but little discomfort. If the test solution be placed in the eye of a non-tuberculous person there is no reaction.

Calmette's results have been confirmed by a number of observers.

In carrying out the observation neither ordinary tuberculin nor Koch's older tuberculin should be used, as the glycerin it contains may irritate the conjunctiva and obscure results. Calmette advises a one-per-cent solution of dry tuberculin precipitated with alcohol. This is dispensed as a powder, and can be dissolved in distilled water before use.

In all the control cases where the patient obviously did not suffer from a tuberculous affection the reaction was negative. The method is so simple that it should commend itself for use in general practice wherever doubt exists as to the presence of a tuberculous lesion.

Is it free from danger? One would expect that in those cases of obscure chronic tuberculosis in which the reaction is of such diagnostic help there could be no danger; and this is claimed for the method. One might hesitate to use it in a case of acute tuberculosis. The resistance of the conjunctiva must undoubtedly be lowered for the time being, and if any tubercle bacilli were in the circulating blood it is conceivable that they might attack the conjunctiva during the period of lowered resistance. Cases of acute tuberculosis, however, are not those in which the reaction is most required as an aid to diagnosis. It is the obscure chronic cases which at times present such difficulty of diagnosis, and it is in these cases that the reaction should prove useful and free from danger.

SPINAL ANESTHESIA.

In the *Wiener klinische Rundschau* of November 17, 1907, PREINDLSBERGER contributes an article upon this subject, and is strongly in favor of this method of producing anesthesia for operations upon the lower portion of the body. He records 93 cases in which he employed novocaine and 100 cases in which he used tropacocaine. The latter drug was given dissolved in cerebrospinal fluid which was obtained at the time that the puncture was made. The novocaine was dissolved in normal salt solu-

tion. He has used novocaine in four cases for operation upon hemorrhoids; one of varicocele; one of extirpation of the rectum; two of hematocele; two of perineal cystotomy; one of amputation of the penis; and two of plastic operations upon the urethra. In all these cases the anesthesia was complete. In one or two of them headache persisted for a day or two and the temperature was slightly raised. In nine operations upon the extremities, such as amputations, and such operations as osteotomy and resection of the knee, he also got good results. He also found that novocaine was fairly satisfactory in 69 of his cases. In 61 of these the method gave satisfactory results so far as anesthesia was concerned, but in several of them very severe headache followed for from one to three days. In nearly all of his cases adrenalin was added to the novocaine before injection. The strength of the solution was from one to three grains in 15 or 30 drops of salt solution to which two or three drops of adrenalin were added.

In the employment of tropacocaine the writer used a half to one grain of the drug. In 11 of his 100 cases the parts operated upon were the prostate, the scrotum, partial castration, and fistula. In these instances headache was more marked than in the cases in which novocaine was employed, lasting for a longer period, but the anesthesia was satisfactory. In 13 operations upon the extremities, varying from amputation to resection of the knee, the result was satisfactory. In 76 cases upon the inguinal region good results were also obtained, but in one instance slight collapse was noted, and in a number of instances the temperature rose somewhat after the operation. One case died fourteen days after the operation from pleurisy, and another after that from peritonitis due to gangrenous intestine, which, in turn, was due to hernia for which abdominal section had been resorted to.

In *La Presse Médicale* of November 20, 1907, Chaput has quite an exhaustive article upon this same subject. To use his words, the advantages of this method of producing anesthesia are "immense and incontestable." He details a number of cases

in which he has used it when major surgical procedures were necessary, not only in the lower extremities but in the upper as well, often employing caffeine by injection before stovaine was used. He also injects an hour before the operation about 1/100 of a grain of scopolamine. After the operation he states that the patient is quiet, and sometimes has headache which lasts for two or three days. The respiration, in his experience, varies from 60 to 20 during the operation, and the pulse from 60 to 100.

In regard to the accidents which occur under this method he states that they are due, first, to the employment of a poorly prepared solution of stovaine or to some disease in the patient which renders its use dangerous. He believes that contraindications to its use are arteriosclerosis in those of advanced years, and that it should not be employed in persons who are over sixty-five years of age. So, too, in grave anemia, whether its origin be medical or surgical, in marked cachexia, in grave infections, and in albuminuria and diabetes, intraspinal injections of stovaine are not wise. In syphilis manifesting itself in tabes or myelitis or lesions of the brain it is also dangerous. He then quotes a number of cases in which death occurred as a result of this method, and others in which syncope has developed. In other instances paralysis of the lower limbs and of the sixth pair of nerves has occurred. Headache is quite a constant symptom after its use. In still other instances retention of urine and albuminuria have been noticed.

Chaput concludes that intraspinal anesthesia produced by stovaine is reliable, constant, and benign. By its use successful operations can be performed upon the perineum, the lower limbs, and, in certain cases, the abdomen, the thorax, and even the head. He once more urges that it must not be employed in those of advanced years. He regards the solution prepared by Billon as the only one which should be used, and considers that it is essential to evacuate a small quantity of cerebral spinal fluid before the injection, also that a small dose of scopolamine an hour beforehand

is very advantageous, and an injection of caffeine is to be used if the patient is pale and the pulse small.

THE RESUSCITATION OF THE APPARENTLY DROWNED.

The *London Hospital Gazette* for November contains a report of a demonstration of Professor Schäfer's method of resuscitating the apparently drowned given by Mr. W. M. Fletcher, Fellow and Tutor of Trinity College, Cambridge, at the London Hospital, before a mixed audience, among which were several members of the Royal Life Saving Society. Mr. Fletcher was introduced by Mr. Sydney Holland, who said he was present when the regrettable "grind" accident occurred at Cambridge, and used the Silvester method upon a woman with some success; but she eventually died with symptoms of a ruptured liver. In conversations afterward with Mr. Fletcher he learned of the Schäfer method, and subsequently invited him down to the "London," to give a demonstration of the new method.

After a brief description of the mechanism of respiration, Mr. Fletcher sketched the history of the various methods of artificial respiration. Marshall Hall, early in the last century, advocated pressure on the thorax from behind, together with rolling on the side, a method which was adopted throughout the civilized world. In 1850 Silvester drew attention to the importance of initiating inspiration. His method was to draw up the arms and press them into the chest wall, the patient lying on his back. The Royal Medical and Chirurgical Society appointed a committee, which received the Silvester method with favor, and it was adopted by the Royal Life Saving Society and other societies. Another method, the Howard, was to apply rhythmical pressure to the lower part of the chest, the patient lying in the dorsal position.

In 1889 the Royal Medical and Chirurgical Society appointed a second committee, which, after fourteen years' work, produced the report of 1903. The chief interest

of the report was the record of experiments made by Schäfer. In these he drowned some thirty dogs, which were fully anesthetized before they were drowned. From these experiments he proved that (1) the presence of water in the lungs was not serious, since it was rapidly absorbed, but its presence in the windpipe was serious. (2) During suffocation the organs of the body were enormously engorged with blood, the liver in particular, which consequently was exceedingly tender and friable, and liable to rupture. Though he performed artificial respiration with great care upon the dogs, several livers were ruptured. (3) The introduction of water into the windpipe has the action of increasing the secretion of mucus. The committee tried all the methods upon a living patient, and measured the amount of air expelled by each method. The report showed that all the methods were adequate, but went no further. As an afterthought Professor Schäfer saw that they were on the wrong tack, and showed that what was wanted was a number of repeated efficient breaths and not one big one—a hurdle race as compared to a high jump. Instead of taking one sample of each method, Schäfer carried out each for five minutes, thirteen times to the minute. The result was as follows:

AVERAGE VOLUME OF AIR IN ONE RESPIRATION IN SERIES LASTING FIVE MINUTES.

Marshall Hall.....	254 Cc.
(Rolling and prone pressure.)	
Silvester	178 Cc.
(Arm traction and supine pressure.)	
Howard	295 Cc.
(Supine pressure.)	
Schäfer	520 Cc.
(Prone pressure.)	

(The average tidal air of a middle-sized man is 300 to 350 Cc.)

Schäfer pointed out that his own method is the same as Marshall Hall's without the rolling, which he thinks waste of time. He placed the patient in the prone position, with a rolled-up coat under his chest. Kneeling beside the drowning man, the operator placed his hands on the lumbar region, one on each side of the vertebral column and over the last two ribs, the

fingers pointing upward and outward. Rhythmical pressure of the whole weight of the body was then levied upon the patient fifteen times to the minute. The advantages of the Schäfer method are: (1) The prone position, enabling the tongue to hang downward and forward; (2) the first movement, being one of expiration, helps water out of the windpipe; (3) the simplicity of it—a weak man can do it unaided for hours, and can give instructions to assistants meanwhile; (4) the small danger of rupturing the liver. The disadvantages of the Silvester are: (1) That it is elaborate and impossible for one man to carry out alone—the printed instructions show four men; (2) several minor points had to be attended to before artificial respiration was commenced. Is there seriously anything to be said in defense of the method other than that it is theatrical and useful for competitions? The Schäfer method is not yet universally known, but it has been used to the lecturer's knowledge already two or three times without success—once by a pupil of Professor Schäfer in Edinburgh upon a victim of a skating accident, and in two recent cases near Cambridge.—*British Medical Journal*, Nov. 30, 1907.

THE MEDICAL VS. THE SURGICAL TREATMENT OF GASTRIC ULCER.

In the *American Journal of the Medical Sciences* for December, 1907, MUSSER reaches the following conclusions:

Gastric ulcer is a medical disease.

Gastric ulcer with complications and sequels is sometimes a surgical disease; if perforation occurs acutely, it becomes a surgical affection at once; if hemorrhage occurs acutely, it is rarely a surgical affection; if repeated and chronic, it is a surgical affection.

If the ulcer is productive of perversion of secretory function alone, it remains a medical affection. Inasmuch as hyperchlorhydria is in part a neurosis, the secretory function can be balanced chiefly by medical, dietetic, and hygienic measures. Even if pyloric spasm attends the hyperse-

cretion and hyperacidity it does not necessarily take the case beyond medical care. It is wrong to submit such patients to operation, unless motor disturbances become prominent.

If the symptoms and physical signs of retention from obstruction, dilatation, hour-glass contraction, or adhesions supervene and persist, the case is surgical.

If the symptoms of gastric ulcer become continuous in spite of medical treatment and incapacitate or threaten life, and if hemorrhage recurs, and secondary anemia arises, it is a surgical disease. Such cases, however, are always attended by organic sequels.

The extraordinary frequency of chronic gastric ulcer with sequels requiring operation is due to neglect of the treatment of an ulcer in its incipency. Statistics show that most patients are operated on between the thirtieth and fortieth year and have an ulcer history of five or ten years' duration.

What, as a medical attendant, should one do with a case of gastric ulcer? From personal experience and a study of recorded cases the author says, if it is simple, uncomplicated ulcer, employ rest, at first absolute and later modified, a suitable diet, and the drugs indicated, for at least four months. If attended by an organic complication, as pyloric obstruction from thickening or from adhesions, or by dilatation, if extreme, or by hour-glass contraction, surgical measures are in order.

If perforation exists there should be no delay in operating.

If hemorrhage exists operation is rarely necessary, and if acute, not unless the peril of hemorrhage outweighs that of operation—a nice estimation of values. If hemorrhage is persistent and gives rise to anemia, operation is indicated. Under any circumstances and until cure is established keep the patient in touch with a surgeon. The medical attendant should never assume the attitude of a distinguished physician who congratulated himself that he did not ask a surgeon to see a case because it had features like those of pancreatitis, a suspicion borne out by the autopsy, which

showed such lesion. It should be the duty of the physician to associate with himself a surgeon, to the end that accidents may be taken care of at once, and organic sequels relieved.

The final very serious duty is the selection of the surgeon. One who has good technical ability and has had considerable experience in gastric surgery should be selected. The operation even of gastro-enterostomy is not trivial and requires the best service at command.

After the surgical procedures of necessity are carried out the patient must be treated medically. Medical treatment must be continued over a period of four months at least; hygienic and dietetic treatment over a period of years.

A patient who has had gastric ulcer should, for all time, observe the hygienic and dietetic rules which keep digestion to an approximately normal state, which prevent anemia, and which, above all, so conserve the nervous system as to prevent neurosis.

OBSERVATIONS UPON CERTAIN BLOOD-PRESSURE-LOWERING RE- FLEXES THAT ARISE FROM IRRITATION OF THE IN- FLAMED PLEURA.

From a research with this title CAPPS and LEWIS, in the *American Journal of the Medical Sciences* for December, 1907, draw the following conclusions:

1. Aspiration of oil from the pleural cavity of healthy dogs causes little or no change in the arterial pressure.

2. Aspiration of inflammatory exudate from the pleural cavity of dogs with acute pleurisy often causes a more marked fall in blood-pressure. This fall in pressure depends more on the degree of trauma or irritation of the inflamed pleura than on the amount of exudate withdrawn or the rate of withdrawal.

3. Irritation of the visceral pleura of healthy dogs by mechanical, thermal, and electrical means, and by certain chemicals, produces little or no effect on blood-pressure, except over the roots of the lungs,

where mechanical and electrical excitations produce long strokes of vagal type.

4. The effect of irritation of the parietal pleura needs further investigation. The common drop of blood-pressure and disturbance of respiration occurring when the trocar is forced through the chest wall into the cavity is probably due to injury of the parietal pleura. The reflex is usually transitory, and is seen in both normal animals and in those with pleurisy.

5. In dogs with pleurisy induced by turpentine or by oil contaminated with bacteria, excitation of the inflamed visceral pleura by mechanical and chemical irritants gives varying results. In some cases there is no marked change in blood-pressure; in others there is a considerable fall in pressure that may even be fatal.

6. These reflexes conform to two types, which as a rule occur singly, but may be combined: (a) The cardioinhibitory type, in which the heart is slowed and the pulse tracings make violent excursions with a great range between systolic and diastolic pressure. Respirations are also usually slowed and may be inhibited. This type of reflex when it occurs alone is seldom fatal. (b) The vasomotor type, in which the pulse tracings show a steady, rapid decline of pressure without a great difference in systolic and diastolic pressure, and frequently terminates in death. Respirations as a rule are shallow and may be rapid. In fatal cases the blood-vessels of the abdominal viscera are much engorged from acute vasodilatation. The brain shows no evidence of embolism or hemorrhage.

7. The cardioinhibitory reflex is central, because it is prevented or stopped by cutting both vagus nerves in the neck. Atropine in a dosage of one milligramme paralyzes the cardioinhibitory fibers and destroys the reflex.

8. The vasomotor (dilator) reflex may be central or peripheral. If central, the afferent impulses reach the medulla by way of the thoracic sympathetic, the white rami, and the cord, and not by the vagosympathetic cord. This is proved by the failure of section of the vagosympathetic cord to

alter or abolish the reflex. If peripheral, the reflex goes from the pulmonary fibers to the pulmonary plexus, thence to the thoracic sympathetic nerves and downward through the splanchnics to the celiac and other plexus in the abdomen. This reflex is more direct than the central form, but seems to us inconsistent with the views generally accepted as to the course and direction of impulses in the sympathetic nerves. Adrenalin is the physiological antagonist to the vasodilator reflex and is often life-saving. Atropine, on the other hand, by its tendency to dilate the cutaneous vessels and lower the mean arterial pressure, seems to intensify the reflex. There is some evidence that the previous administration of atropine modifies the blood-pressure-elevating action of adrenalin and thereby deprives it of its full beneficial effect.

9. These types of reflexes occur also in man during operative procedures upon the inflamed pleura. The cardioinhibitory type is manifested by a slow intermittent pulse, with a great difference between systolic and diastolic pressure, and by a pulse that grows steadily weaker until it cannot be felt.

10. For emergency use in case of falling blood-pressure and symptoms of collapse adrenalin intravenously is indicated. Atropine is of little service and may even do harm.

11. Preventive measures come readily to mind. The instrument used in thoracentesis should not irritate the visceral pleura any more than is absolutely necessary. Therefore the trocar is preferable to the needle. The trocar should not be inserted at a greater depth than is necessary to obtain fluid. Great care should be employed during the drainage of an empyema, especially to avoid a long projection of the drainage-tube inside the cavity. Swabbing the pleural surface is attended with danger. Finally, emphasis is placed on the clinical importance of taking blood-pressure readings at the beginning of and during all operations in the pleural cavity, in order to foresee and thereby prevent the development of a dangerous blood-pressure-lowering reflex.

THE INDICATIONS FOR, THE METHODS OF, AND THE RESULTS TO BE EXPECTED FROM THE MEDICAL TREATMENT OF GASTRIC ULCER.

STOCKTON states in the *American Journal of the Medical Sciences* for December, 1907, that the following statements summarize the medical treatment as he sees it:

Attempt to secure a calm mind, a quiet nervous system, and improvement of the general health.

Make a positive diagnosis, begin treatment early, and carry it out with painstaking attention to details for a long time.

Obtain general rest. In some cases feed the patient sufficiently, but discreetly; in others, starve the patient for a period, depending for support upon frequent, small enemas of normal salt solution.

For the control of hemorrhage, in addition to rest, one may succeed by local treatment through the stomach-tube, using ice-water, or adrenalin solution, followed by gelatin water.

In irritating hyperacidity, one should use local general sedatives and antacids.

To relieve hypertension and spasm of the stomach, in addition to suitable drugs, use external applications according to von Leube, or the equivalent of these.

Finally continue treatment long after apparent cure, and study the stools for occult blood; but the dictum of Bettman should also be remembered, that "it is not alone the question of how long treated, but how well treated." Statistics mean little, because of the uncertainty of method and the faulty detail so often observed in the treatment of this disease.

BALSAM OF PERU IN GENERAL SURGERY.

SUTER states that during the past two years he has introduced, in the surgical clinic at Innsbruck, the use of balsam of Peru in the treatment of all recent open accidental wounds—562 cases in all. Among these were many injuries of the most severe nature, such as complicated fractures with extensive injury to both bones and soft

parts. Concerning especially the complicated fractures of the long bones, which will probably be of the utmost interest, he presents over 20 purely conservatively handled cases, omitting traumatic amputations, one case of primary amputation, and two cases which died shortly after the injury. Of these cases 14 healed without complications, and in only six was a secondary operation necessary on account of pus formation, for the most part without temperature elevation. Severe disturbances in the healing of the wounds did not occur in any case, in spite of the fact that there were some very severe compound fractures. In no case was secondary amputation necessary, and he could always retain useful extremities.

The same favorable results were obtained in the treatment of extensive contused wounds of the soft parts, in crushed hands and fingers, and in all lacerated wounds of the most varied nature. In all of these conditions healing could be obtained without severe inflammatory processes, even though the wounds were badly lacerated, if the cases only came under treatment within the first two days. It is important that the balsam of Peru be brought as evenly as possible into all the cavities and spaces of the wound.

Concerning the question as to how the action of the balsam in accidental wounds is to be explained, the author has caused exhaustive experiments to be made, and has come to the conclusion that there are three entirely distinct properties of the drug:

1. The ability of the balsam to mechanically enclose bacteria, and in this way to eliminate the same as far as the organism is concerned. The defensive agents of the body have, of course, a better chance of acting successfully the less poisonous material there is present.

2. Furthermore, the bactericidal properties of the balsam play an important rôle. Even though they may be slight, such properties are undoubtedly present, as numerous experiments have shown. This slight bactericidal power is of great importance, however, taken in conjunction

with the ability of the balsam to enclose bacteria, as it gives opportunity for a longer continued action upon the same. The exclusion of the bacteria, which was at first purely mechanical, becomes absolute after a time, inasmuch as they are killed. It is worthy of note that the balsam of Peru acts not only as a bactericide, but also gives up into the vicinity bactericidal substances, which fact the writer states he could almost prove by experiments. Since the drug in contrast with soluble substances remains for a comparatively long time undissolved in the wound it thus forms, as it were, a reservoir of antibacterial substances.

3. Finally, balsam of Peru possesses to the highest degree positive chemotactic powers. In the neighborhood of a drop of the drug, which has been injected into the tissues, is formed a peculiar wall of leucocytes. When one now realizes that not only is the process of phagocytosis caused chiefly by the leucocytes, but that the latter, in all probability, stand in intimate relationship with the formation of those bactericidal substances of the body fluids, *e.g.* the alexins, it appears justifiable to ascribe a certain favorable action in the process of wound healing to this enormous accumulation of leucocytes, caused by the balsam.

In addition to these three main properties of the balsam of Peru—namely, the “enclosing powers,” the bactericidal powers, and the chemotaxis—should be noted also the antagonistic action of the drug in preventing putrefaction in the dead tissues. This latter power stands, of course, in intimate relationship with the properties described under Nos. 1 and 2.

As is well known, many varied reports concerning the untoward action of the balsam on the urinary apparatus have been circulated. These concerned almost without exception cases of scabies treated by inunctions of the drug. Exact urinalyses have been made in a great number of cases, and albumin has never been found present. In no case was there observed any disturbance in the general condition of the patient, which could be attributed to renal irrita-

tion. Nevertheless special attention must be given to this question.

According to the author's opinion, the balsam of Peru treatment, if applied in suitable cases, such as contused and lacerated wounds, gives better results than all other methods.

Through the results of the author's experimental investigations, the balsam of Peru method of treatment has been placed to a certain extent upon a scientific basis, so that its use can no longer be considered quackery. In all of his numerous cases he has never noted renal irritation due to the balsam. When such cases are reported it is very possible that the balsam used was not perfectly pure. There are aromatic bodies which even in slight traces can irritate the kidneys. As is well known, the drug is often adulterated, and the first requisite is to use only the purest balsam.

Borchard, of Posen, remarks that he can, in general, corroborate the favorable results in wound healing from the use of balsam of Peru, but that, contrary to Suter, he had noted even after the use of relatively small amounts of the drug (3 to 4 grammes) albumin and casts in the urine, which disappeared immediately after suspension of the balsam. The preparations used had been obtained from two different drug firms, and varied in their chemical composition only very slightly from the formula of the German Pharmacopœia. Continual careful urinalysis is therefore necessary in the use of the balsam of Peru.

REMOVAL OF THYROID TUMORS.

BARKER (*Practitioner*, September, 1907) records such entirely satisfactory results from the use of local injections as a means of producing anesthesia in goitre operations that the description of his technique is well worthy of careful consideration. Indeed, he states that surgeons have been astonished at the slight degree of pain experienced by his patients, and attributes this happy result to his method rather than to the difference in the nervous susceptibility of the English and the Swiss goitre patients.

American surgeons as a rule have abandoned local anesthesia in goitre operation because they have found it most unsatisfactory, believing that a method of relieving pain which requires the assistance of one or two powerful men to hold the patient on the table, aided by cunningly placed straps and bonds, is scarcely adequate.

It is therefore highly important to know of a procedure by means of which the dangers of a general anesthetic may be avoided and yet the patient saved any great degree of suffering. Barker describes his technique of injection as follows: The solution used is a 2 per 1000 of B-eucaine in normal saline, freshly prepared by boiling. When it is cooled to blood heat 10 drops of adrenalin chloride solution, 1:1000, are added.

The injection is best done in the ward while the patient lies comfortably in bed. It is made first with a small, sharp Freienstein's needle into the skin, not under the skin, all along the line of the curved incision usually employed (Kocher's). This injection should distribute the fluid pretty widely about the track of the incision, so as to reach all nerve filaments likely to be divided. This will require about 30 cubic centimeters. The short sharp needle is then exchanged for a very long one of somewhat larger size. This has a closed rounded and polished end, with an eye close to it. It cannot of course be thrust through the skin itself, but requires a puncture to be made for it with an ordinary suture needle with sharp point and edges. A straight Hagedorn's needle is perhaps the best. This puncture is made in the line already injected, and, by preference, at one corner of the curved incision line. The blunt long needle is thrust through this puncture into the subcutaneous tissue, and is slowly pushed across the neck toward the other horn of the incision, the fluid being injected as it goes. It is then partially withdrawn and pushed outward and downward for a couple of inches, and again nearly straight upward. The fluid thus diffused, which will equal 30 to 40 cubic centimeters, will cross the track of most, if not all, of the branches of the cervical

plexus, going to the area of skin in the field of operation on one side. Then the needle is thrust in the same directions from a puncture at the other horn of the curved incision, and the same process is repeated. The same blunt needle is then pushed between the deeper layers of the cervical fossa round the capsule of the thyroid on both sides, and the rest of the fluid is injected on both sides. For a tumor of moderate size 100 cubic centimeters is ample, but for larger swellings up to 150 cubic centimeters may be employed, but this is rarely necessary if the fluid is evenly distributed over the area indicated. This abundant use of a very weak solution with adrenalin produces a good deal of what one may call an artificial edema, but this disappears before long, and at the end of from forty minutes to an hour the analgesia is at its height, and the edema is practically gone.

Another desirable effect of the injection is now seen in the comparative bloodlessness of the whole area of operation. To operate before at least half an hour has elapsed since the injection is a mistake, where adrenalin has been employed. Adrenalin delays the effect of B-eucaine, but prolongs its action for on an average about $2\frac{1}{2}$ hours. In some of the published cases of local analgesia which have recently appeared, this error of operating at once has been made, and doubtless in many others. The secret of a good local analgesia is to inject a large amount of a dilute solution, with due regard to toxicity, and to wait a sufficient time before operating. As to toxicity, it is largely reduced by the action of adrenalin, and Barker has injected 200 cubic centimeters of the above solution without ill effect. But this amount would not often be nearly approached.

In cases in which we are dealing with nervous patients, it is well to give a quarter of a grain of morphine shortly before the operation. It induces a sense of calm and restfulness, though, as we know, some patients are made sick by it.

At the end, say, of three-quarters of an hour to one hour the patient can be brought into the operating-room, and the operation

is begun by a curved incision beginning over the border of the sternomastoid muscle on one side at the level of the upper pole of the lobe, and sweeping down to within half an inch of the episternal notch and up again to the point on the opposite side. This is rapidly deepened until the borders of the sternomastoids are seen, and the flap, consisting of skin and platysma, is turned up and covered with sterile gauze. The cervical fascia over the sternohyoid and thyroid muscles is best divided vertically in mid-line, when the muscles can be drawn aside with hooks, exposing the capsule of the gland. But where the latter is much enlarged it may be necessary to divide these muscles; this, however, is very rarely necessary, and is, of course, better avoided. Barker has never been obliged to divide them.

The next step is probably the most important in the operation, viz., the finding of the capsule of the gland, which is a very thin structure normally. But with a forceps and curved director it may be cleared and recognized after a little practice. Where an adenoma is present, the capsule is thin enough to allow of the blue-pink color of the tumor to be seen through it. It is then cautiously torn through, and with the curved director inserted under its edge, which is held in forceps, the tumor may be easily separated and shelled out with very little bleeding. If this interval between the adenoma and the capsule is not hit off accurately, not only is the dissection difficult, but the capsule, which is very vascular, bleeds freely. The oozing from the interior of the capsule when the adenoma is being shelled out may possibly be smart for a moment, but if the cavity is packed with gauze for a minute or two, stops readily. A little more tendency to bleed is met with when the adenoma is covered by normal gland tissue, and this has to be cut through. But even here pressure with dry gauze will arrest the blood, and if the tumor is cleanly stripped out and the cavity packed, the latter is dry, as a rule, before the skin stitches are in place. Before the stitches

are tied the flap is thrown back and the packing removed for a thorough overhaul of the wound to wipe away clots, and dried with fresh gauze. Then the flap is laid down and the sutures are tied, a strand of gauze being left in the lowest part of the incision above the sternum for twenty-four hours if need be. But so far as the writer's own cases are concerned, this has not been necessary in the majority; the wound has been completely closed at once, and he has never had cause to regret having done so. Kocher, in his notes on his last 1000 cases, gives reasons for routine drainage, but the tumors which he has removed have been, as a rule, larger than in Barker's cases.

The author believes that enucleation is not always the best procedure. We meet with others in which the greater part of a lobe is so studded with small adenomata or cysts that the only effectual operation is the removal of the entire lobe. This may be a very easy matter, or one of the most difficult operations. If the lobe is large and jammed down behind the sternum there is hardly any procedure which requires greater care and is more difficult than its enucleation and removal. And yet here, too, he has found local anesthesia carried out as above quite adequate. And it must be remembered that some of the smaller tumors, which lie deep and press upon the side, or even back of the trachea, while their lower borders lie beneath the top of the sternum, are often far more difficult to remove than swellings ten times their size, which project forward between the sternomastoids and more or less overhang the sternum.

The removal of a whole lobe differs but little from that of an adenoma, except in the fact that vessels require more attention. The enucleation of the lobe is carried out external to the capsule, in this case by stripping with the director, aided by an occasional snip with curved scissors. Indeed, the curved scissors is one of the best directors, the lower blade when necessary being thrust under successive strands of alveolar tissue, and the upper blade dividing them.

INGUINAL HERNIA IN CHILDREN.

CLOGG (*Practitioner*, No. 471, 1907), basing his remarks upon an experience of 126 cases of inguinal hernia in children, states that he operated upon 26 cases within the first six months of life, including six cases of strangulation, and 10 cases in which attempted strangulation had occurred on more than one occasion and the hernia had only been reduced with difficulty. The youngest infant was five weeks old, suffering with strangulation.

Between the ages of seven and twelve months there were 34 cases; during the second year, 30 cases; after the second year, 36 cases.

There was no fatality. Six cases suppurated. Only 75 per cent of the cases could be followed, and in all the result was perfect. In 21 cases of the series the hernia was bilateral. The sac was usually empty.

There were two cases of cecal hernia, the age of the children being eight and six months respectively, the hernia having appeared in each case shortly after birth.

The cecal hernia usually raises the posterior wall of the sac, the peritoneum being reflected from the sides of the cecum to the sac wall, leaving some of the posterior wall uncovered by the serous membrane. Such herniæ are often of large size, often irreducible in whole or in part, difficult to retain by a truss, and not infrequently become incarcerated or strangulated.

Hernia of the bladder as a complication occurred in only one case. On six other occasions, whilst operating for hernia, the bladder has been seen. A mass of extra-peritoneal fat precedes the bladder; the appearance of this should be a warning that a little more traction will expose the bladder.

Clogg has noted in two instances tuberculosis of the sac. This condition is more frequent in children than in adults. It is associated often with abdominal tuberculosis; exceptionally the tuberculous infection is confined solely to the sac. The sac containing fluid, and particularly if there is a sac on both sides, should always be regarded with suspicion, and lead to a careful

examination of the abdomen. A sudden or painful enlargement of a hernial sac, irreducible, or only in part reducible, without signs of strangulation, should excite suspicion of the ascitic form. If there is evidence of abdominal tuberculosis the diagnosis may be easy, but in these cases the abdominal signs are often absent, and the true condition is then unsuspected.

Strangulation in infants is extremely common.

THE OPERATIVE TREATMENT OF ASCITES DUE TO HEPATIC CIRRHOSIS.

JONES (*Clinical Journal*, Oct. 2, 1907) observes that cases of ascites thought during life to be due to hepatic cirrhosis can be classified after death as follows: (1) The diagnosis was not correct, the cirrhosis is not present, the ascites having been due to some other factor. (2) Cirrhosis is present, but there is some associated condition to account for the ascites. (3) Cirrhosis, and cirrhosis only, is present as the cause of the ascites.

It is generally believed that the effusion is a passive or mechanical effect, depending upon the increased blood-pressure in the branches of the portal vein brought about by the contraction of the new fibrous tissue in the liver, or very rarely by thrombosis of the trunk of the portal vein. Those who hold to the toxemic theory as to the causation of ascites can produce strong clinical evidence upon which to base their belief. In a certain proportion of cases the cause of the ascites is undoubtedly cardiac failure. The frequent occurrence of tuberculosis with the cirrhosis is generally recognized, and doubtless in some cases of ascites regarded as of purely hepatic origin; chronic tuberculous peritonitis is a factor. Ascites usually develops late in cirrhosis, and as a matter of clinical observation few patients live long enough to have a second tapping.

Jones quotes Ramsbottom, who gives statistics of 45 cases of uncomplicated ascites, of which 14 were never tapped, 14 were tapped only once, 10 were tapped only twice, and 7 more than twice.

Twelve cases lived for six months or longer after the onset of ascites, but the 31 who were tapped only survived the first tapping on an average of $6\frac{1}{2}$ weeks, and the onset by 27 weeks.

Ramsbottom also collected 14 instances in which the cirrhosis was complicated by chronic peritonitis. All these were tapped more than once, and, excluding one remarkable case, the average duration of life was one year.

In the choice of cases suitable for operation a correct diagnosis is of vital importance. Examination of fluid withdrawn from the abdomen may be of service. Such fluid if directly due to cirrhosis has a specific gravity not higher than 1015, and not more than .4 per cent of albumin.

Ross states that in ascites of a mechanical origin the predominating cells are endothelial. In tuberculous peritonitis there are but few endothelial cells and many lymphocytes. In ascites of mixed origin the cell count is of no value. Moreover, the endothelial cells are the main feature of mechanical ascites in the fluid first drawn and not in subsequent tapplings, since tapping nearly always introduces an element of inflammation. Operation is contraindicated in those advanced in years or in the last stages of cirrhosis, in which much edema of the legs, wasting, mental symptoms, and drowsiness are exhibited. Decrease in the amount of urea excreted, with marked oliguria and acholia and urobilinuria, contraindicates operation. Hematemesis and melena should not prevent the performance of an operation—indeed, they are distinct indications for it.

The prognosis is better in those with enlarged livers than it is in those with small atrophied livers. In general terms it may be said that the patient most suitable for operative treatment is one who is still fairly young, who has recovered from the withdrawal of ascitic fluid shown to be of a mechanical rather than of an inflammatory origin, whose liver is enlarged, and whose symptoms are more those of portal obstruction (*e.g.*, hematemesis) than those of toxemia.

The common object of all operators, based on the idea that the ascites is due to obstruction, is to increase the means of communication between the portal and caval systems, although the means taken to secure that object vary considerably in detail.

Nearly all surgeons select the omentum as the most suitable area for their purpose, by reason of its vascularity, superficial position, and mobility.

As to the actual technique adopted for this purpose, there are two different methods—extraperitoneal fixation and intraperitoneal fixation—the latter being the original idea, the former of more recent origin and in favor on the Continent.

Extraperitoneal omento-fixation is supported by Schiassi, and is performed as follows: A vertical incision is made through the left rectus from near the costal edge downward for six inches, and from the upper end of this incision another is made transversely just to cross the midline.

These incisions are deepened down to, but not through, the peritoneum, and the angular flap so formed is turned inward.

The peritoneum is now incised in the line of the transverse incision, the omentum is drawn through until it just fits the opening in the peritoneum, and after being rubbed with gauze the base of the omental flap is sutured to the peritoneal edges and the remainder laid flat on the outer surface of the peritoneum and sutured in that position.

The flap is now brought partly into place over the omentum by incomplete suture of the transverse incision, and then the peritoneum is divided along the vertical line and the spleen brought up to the surface of the wound, its capsule rubbed, and after inserting gauze plugs into the abdomen above and below it is sutured to the peritoneum and muscle on either side of the wound.

The rest of the incision is now closed, and the upper and lower sutures left to be tightened after the subsequent withdrawal of the plugs.

In other forms of the operation the omentum is placed actually within the rectus sheath, and sometimes intentionally or otherwise has been merely taken up by the sutures closing the abdominal incision.

In favor of such a method it has been urged that a more complete anastomosis results, as shown by the experiments on animals carried out by Pascale and Tieschi, but against it must be set its elaborate and difficult technique as compared with the intraperitoneal method, a real objection in the case of the type of patient on whom the operation is to be performed.

Clinically, its advantages do not exist, for by analyzing thirty-eight examples of its use the mortality is found to be 29 per cent, and the percentage of temporary cures 37, as against a death-rate of 22.2 per cent and 45.5 per cent of cures in the intraperitoneal operations.

Nearly all are agreed as to the value of rubbing or curetting the surfaces, the adhesion of which is desired.

The better to insure a good formation of adhesions various additions have been made to the original operation. Thus Turner and Jonnesco have interposed the omentum between the liver and diaphragm, von Eiselsberg recommends cholecystopexy, while Ito and Omi consider it essential to make the intestines adherent, for which purpose they insert plugs into the wound. This last procedure would seem to increase the liability to obstruction as an after-effect, and Bunge suggests that the vascularity of the intestines is so increased as to lead to hemorrhage from the bowel.

Splenopexy was mentioned by Bunge at the Surgical Congress of 1902, and has been carried out on many occasions, the spleen, if enlarged, being merely sutured to the parietal peritoneum as in Schiassi's operation, or if small, being placed in a pocket prepared between diaphragm and peritoneum. Such an operation has also been performed by Narath and again by Aulhorn as a secondary proceeding when the original operation had been without effect.

Fixation of the edge of the liver to the peritoneum by a few points of suture can be easily performed through the original incision, and does not materially add to the length of the operation; it is done by many operators as a routine addition to omentopexy.

Tansini suggested and Widal actually carried out in 1903 implantation of the portal vein into the inferior vena cava. Widal's patient survived the operation for three months, but it is improbable that even such a happy result as this would generally follow so dangerous an operation.

Theoretically and in practice the original operation of Morison appears to be the safest and best, and its author has not seen any reason to modify it since its introduction. It is performed as follows:

An incision, six inches long, is made in the midline above the umbilicus, and the peritoneal cavity is carefully freed from fluid by gauze mops, used rather roughly so as to irritate the peritoneum. A small incision is made above the pubes, just large enough to fit tightly around a glass tube which reaches into the pelvis.

The liver and spleen are rubbed with gauze, the omentum similarly treated is spread out and sutured to the parietal peritoneum over an area as wide as possible, and the incision is closed.

The glass tube is used to remove the ascitic fluid which always reappears until the anastomosis is complete, and the presence of which is likely to prevent the formation of adhesions. The abdomen is tightly strapped after the operation, and the head of the patient's bed is raised to facilitate drainage.

The tube is kept in as long as may be necessary, the strictest possible precautions against sepsis being taken and the fluid removed daily by suction.

The use of the tube is better than paracentesis, which otherwise is almost certain to be necessary for the first few weeks after operation.

Many surgeons have objected strongly to its use on the grounds that infection of the peritoneum is a possible sequel, but that this is not the case is shown by Morison, in his personal experience of 16 cases, not having met with this disaster once.

Sinclair White follows Morison very closely, only differing from him in separating the peritoneum from the rectus sheath, suturing it in its reflected position, and fix-

ing the omentum to the exposed abdominal wall.

Both authorities lay stress on the importance of careful living and abstinence from alcohol on the part of the patient after recovery.

The immediate dangers of the operation are peritonitis, shock, and death from some already existing cause, such as toxemia or renal disease, which should have warned the operator to hold his hand.

The later ill effects which may be caused by the operation are ventral hernia and intestinal obstruction, the former no more commonly than after any other abdominal section, and the latter a sequel which one would expect to be common, but which in actual practice is rare.

Jones ends his article with the following conclusions:

The immediate cause of ascites occurring with cirrhosis is still in doubt, but probably portal obstruction and toxemia are both at work.

The operation is of most value for those cases in which, as sometimes occurs, the ascites appears early in the course of cirrhosis.

At present the operation is followed by death within a month in about one-third of the cases; about one-third show marked improvement; and the remainder are slightly bettered or unaffected.

This mortality rate includes many cases which are unsuitable, and with improved technique and selection of cases the immediate death-rate should certainly not exceed 10 per cent.

The operation, since it is not considered to effect a permanent cure, should be deemed a success if the patient remains free from ascites for one or two years; a greater relief than this can hardly be hoped for.

In a certain number of cases the ascites may have been the outcome of chronic peritonitis, tubercular or otherwise, and in such a cure, if effected, must be ascribed to the laparotomy alone.

The effusion most suitable for this treatment is that of a patient who has survived one or two tapplings, who presents the ob-

structive rather than the toxic symptoms of cirrhosis, and whose general condition is fairly good. Such are not common, and the majority of examples of ascites with cirrhosis do not seem suitable for this form of treatment.

THE OPSONIC INDEX IN THE INJECTION TREATMENT OF ERYSIPELAS.

SCHORER (*American Journal of the Medical Sciences*, November, 1907) bases his contribution to this subject on a study of thirty-seven patients. A complete chart indicates that erysipelas causes an increase of the opsonic index, which reaches its maximum about the third day of the disease, and is followed by a gradual fall. During the investigation thirty-seven patients were injected with streptococci killed by heat. The number of cocci used for injection varied from 25,000,000 to 100,000,000. The effect on the opsonic index was studied in ten patients receiving 25,000,000 cocci, in five patients receiving 50,000,000 cocci, and in eleven patients receiving 100,000,000 cocci. In the first few hours following the injection of killed cultures there may be a trivial rise of temperature from 0.2° to 0.6° F.

A large number of the injected patients as well as those not injected were delirious at times.

The relation of dosage of streptococci to desquamation was as follows: Those receiving 25,000,000 desquamated three days after injection, those receiving 50,000,000 desquamated three and a half days after injection, those receiving 100,000,000 desquamated 2.4 days after injection. Migratory forms were found in eight patients who had received injections of killed streptococci. Whether this migratory form was caused by injections of cultures cannot be determined, since other cases of the migratory type were observed when no injections were made. One of the injected patients with this form of the disease died; this patient had previously received 60 Cc. of antistreptococcic serum and one injection of killed cultures of streptococci three days

before death. The disease, however, was complicated with chronic interstitial nephritis.

Killed cultures of streptococci from erysipelatos lesions do not prevent migration, even if the opsonic index rises.

Recurrence was observed in a number of cases treated with injections of killed cultures. Of the thirty-seven patients who received injections of killed cultures, three died. In all of these the erysipelas was complicated by some other disease.

The opsonic index is subject to such great irregularity that its determination gives little indication of the severity of the disease and is of no value for prognosis. The injection of killed streptococci causes on the whole an increase of the opsonic index, but a relation between the elevation of the index and the improvement of the patient was not observable. While the injection does not prevent migration and recurrence, the apparent shortening of the duration of the disease suggests that injections have some value.

GRAFTING THE WHOLE THICKNESS OF THE SKIN.

YOUNG (*Glasgow Medical Journal*, October, 1907) by a modification of the Wolfe-Krause method believes that he has elaborated a plan which possesses the special advantages of enabling the flap for transplantation to be easily and rapidly dissected out and the resultant wound to be readily closed. Given a patient with fairly good general health and avoidance of damage to wound or grafts during the first few days following the grafting process, every one of the grafts should live and flourish. Discoloration, blisters, or superficial desquamation of the grafts are exceptional. The complete integrity of the transplanted portions of skin is preserved even to the hairs and glands. Nor are these whole skin grafts liable to serious or substantial contraction subsequently. The steps in operative technique are as follows:

The skin required is removed from a suitable situation in the most convenient form—generally as a long ellipse, where much is

required and it is necessary to subdivide. The incision is made by a few bold, clean sweeps of the knife, cutting at once down to the aponeurotic covering of the muscles.

The flap, so outlined, and including skin and subcutaneous fat, is set aside in warm saline or borax solution.

The fresh wound is forthwith closed completely by suture and dressed with aseptic care. Every detail of asepsis, it is needless to say, must be observed, not only at the operation but at the preliminary preparation of the skin of the part from which the flap is to be taken.

Removal of the underlying fat with the skin makes all the difference between a rapid procedure, lasting only a minute or two, and a slow and tedious process of careful and laborious dissection of the skin alone, which may require, as in one case cited, an hour and a half.

Also there is no advantage, but rather the opposite, in leaving a mass of fat intervening between the skin edges. Such intervening fat will either greatly limit the width of the skin flap removable, or necessitate much undercutting of the skin edges and undue traction by strong sutures, if immediate closing of the wound, which is all imperative, is to be effected.

Having been sutured and dressed, the fresh wound is at once covered up altogether from possible contamination during the subsequent proceedings.

The surface to be grafted is now uncovered. If a fresh wound, made under aseptic conditions, the only preliminary to the application of the graft or grafts is the thorough checking of hemorrhage. If asepsis is not practicable, as, for example, where the denudation of the skin is due to burning, the granulating surface is gently irrigated with sterile saline or borax solution, discharge is carefully removed, and the surface is dried with sterile gauze. Any antiseptic employed must be followed by abundance of saline solution; strong antiseptics must not under any circumstances be used.

Before grafting is decided on for any granulating wound, the surface must be

brought into a healthy state. All necrotic tissue and exuberant granulations should be removed in advance (some days before). The surface should be level and of a healthy rose-pink color. The edges should be smooth and clear of dried discharge and epithelial débris. This should be seen to a day or two before grafting is carried out.

It is unnecessary, and probably even a disadvantage, to remove the superficial layers of a granulating surface before applying the graft or grafts. This is contrary to the teaching of Thiersch, who removed these surface layers with the object of bringing the grafts into contact with the deeper, more mature, parts of the wound.

The flap of skin and fat is now taken from the warm solution into which it was put immediately on removal, and the fat is expeditiously removed. This is readily and quickly carried out by turning it over on the palm of one hand, and cutting away the fat with scissors curved on the flat. Very little practice makes the surgeon sufficiently dexterous, and the proceeding takes only a minute or two.

If only a small surface is to be covered, this may be done without division of the graft, but where the surface is an extensive one the flap may be divided up into as large a number of pieces as the surgeon thinks desirable, these being then distributed over it at suitable intervals.

A further saving of time may be effected if, while the surgeon is preparing the grafts, the surface to be grafted has been uncovered and prepared by an assistant.

It is not as a rule necessary, nor is it generally advisable, to suture the grafts in position.

After application of the graft or grafts, the whole surface is covered with some protective material, which will sufficiently resist or modify the pressure of overlying dressings, yet will, when moistened, lie closely upon the grafted surface, keep the grafts in place, and permit of adequate escape of discharge through its perforations or meshes. Such protective material as oiled silk or gutta-percha, suitably perforated, may be employed. Probably, however, the

most convenient and satisfactory material is the "protective gauze tissue" described by Dr. J. C. Renton, of Glasgow, in the *British Medical Journal* of June 14, 1900, and prepared by M'Milan, of Glasgow. This "protective" need not be interfered with for several days, but from the very first the whole dressing external to it should be changed daily. If done with ordinary care, this should involve very little risk of disturbance to the grafts beneath the protective, and any small hypothetical risk is far more than counterbalanced by the advantage gained in the removal of discharge and soiled dressings, whose continued contact with the grafted surface, even if only for a few days, cannot but be detrimental to the local hygiene, and in particular to the chances of continued vitalization of the grafts.

The external dressing which has been found in every way most suitable is a "moist" dressing, which should be abundant and sufficiently absorbent. Plain, smooth, aseptic gauze, soaked with sterile saline or borax solution (not boracic acid, which to some patients is too irritating), is generally the most satisfactory dressing; it should be applied in liberal quantity, and should be covered with a sheet of gutta-percha tissue or other water-proof substance, so as to preserve the "moist" character of the dressing.

The whole is then supported lightly, firmly, and equably with wool and bandages, and the part is placed at rest in the most comfortable position, generally that of complete muscular relaxation, except where counteracted.

NERVE DISASSOCIATION.

BABCOCK (*Annals of Surgery*, November, 1907) by the term disassociation means isolation of the affected part of the nerve through an incision freely opening its sheath, disassociating its component fibers and isolating the nerve from later fibrous compression. Neurolysis is intended to permit the escape of exudate from within the nerve sheath, to reduce pressure upon individual nerve fibers, to free axis cylinders

which have become useless through entanglement of severed tissue, to facilitate the formation of new nerve paths, and to stimulate desirable changes in the nerve trunk. The sheath of the nerve is divided well beyond the limits of lesion, the nerve trunk, lifted upon one or two fingers, is held taut, and the nerve fibers are carefully separated from each other by means of a small sharp tenotome, transforming the structure from a round cord to a flat ribbon-like band of separated fibers. If cicatricial tissue is encountered in the nerve trunk the separation of the fibers is prolonged along straight lines, dividing the scar into multiple parallel threads of tissue. The nerve, previously embedded in cicatricial or fibrous tissue, should be removed from this area, or at least isolated from future cicatricial adhesions by the interposition of adipose tissue, strips of which can usually be secured from beneath the skin.

Babcock states that of seven cases in which the nerve fibers have been partially or thoroughly disassociated, in only one was there detected an increase of paralysis immediately following the operation, while in several there was almost immediate increase of function in the affected nerve field. The first patient reported was one of partial division of the median nerve incident to a wound with a fragment of glass. This was followed by inability to flex the index and second fingers, and anesthesia of the entire palmar surface and the terminal portions of the dorsal surfaces of the first two fingers. Two months later the patient had partially regained the power of flexion of the second finger. He was then operated upon, an incision through the skin showing a fusiform expansion about three times the caliber of the normal nerve. This was incised in the vertical direction and a marked gelatinous and serous infiltration between the fibers found. Four days later the area of anesthesia over the palmar surface was found to have decreased about one-third. The patient could partially flex the fingers at the knuckles, but not at the interphalangeal joints. There was little change for ten months. Recently a progressive increase in

power is reported. In this case thorough disassociation of the fibers was not carried out.

The second case was one of progressive musculospiral neuritis following traumatism. Nerve disassociation was followed by partial return of motion and relief from pain, secondary return of some of the symptoms, and finally progressive improvement.

The third case was one of intractable sciatica. Nerve-stretching was followed by temporary relief from pain and complete palsy. Later a return of the pain was again relieved by nerve disassociation, which also brought about a partial return of motion in twenty-four hours.

The fourth case was one of intense neuritis of the forearm, chiefly involving the sheath of the median nerve. Disassociation of the median nerve was followed by increase of paralysis, but marked relief from pain. There was later a gradual resumption of power and increasing relief.

Babcock holds that disassociation is not as apt to produce paralysis as thorough nerve-stretching, and that in certain cases of motor paralysis following inflammation or injury of nerve trunks disassociation may be followed by a remarkable and almost immediate return of some of the function. He especially commends this treatment in cases of brachial birth palsy where no gross lesion is found in the nerve trunks or where extensive resections, anastomoses, or forms of nerve bridging by catgut or other foreign materials would otherwise be employed.

OTITIC BRAIN ABSCESS.

DENCH (*American Journal of the Medical Sciences*, November, 1907), as the result of a large clinical experience and an extensive statistical study, notes that in cerebellar abscess the route of the infection is usually through the petrous portion of the temporal bone or the lateral sinus. Exceptionally the infection travels through the mastoid or is secondary to cerebral abscess. The most prominent and constant symptom is headache, which is rarely localized, usu-

ally accompanied by vomiting, often by vertigo, sometimes by nystagmus. As suggestive symptoms not always present are to be noted slow pulse, subnormal temperature, retraction of the muscles of the neck, and stupor. Unequal pupils, strabismus, and optic neuritis are observed in a number of cases, the latter symptom perhaps more frequently than the first two named. Of 102 cases collected, in 45 the abscesses were opened behind the lateral sinus; 25 of these were cured and 20 died. In 11 cases the abscesses were opened in front of the lateral sinus. Four of these were cured and seven died. In 46 cases the method of operation was not stated. Of these four were cured and 42 died. Unless at the time of operation the surgeon again traces the infection from the lateral sinus an exploratory opening into the cerebellum should be made anterior to the sinus, in view of the fact that if evidences of infection by way of the sinus are absent the most probable channel has been through either the internal auditory meatus or the aquæductus vestibuli or the aquæductus cochleæ. In either of these latter events the abscess could be more easily evacuated by incising the cerebellar dura in front of the lateral sinus. When this channel lies far forward it is almost impossible to make an incision of any length in front of it, and the posterior root must be chosen.

In an analysis of one hundred cases of cerebral abscess, with special reference to symptomatology, Dench notes that most of these cases have followed chronic middle-ear suppuration. The route of infection was through the tegmen tympani in forty; secondary to epidural abscess in six; secondary to sinus thrombosis in six; in six cases through the mastoid antrum; secondary to infection through the squama in two cases; while in nine no bone defect was found. One case was secondary to a cerebellar abscess.

Headache and vomiting and slow pulse were prominent symptoms, as was vertigo; later coma and stupor, a little dulness, and aphasia. Mental dulness and optic neuritis were frequently observed.

Aphasia was noted in 10 cases, nystagmus in four, parietic symptoms in 17. In 15 they were on the side opposite the brain lesion, in two on the same side. The results of operation showed 52 cases resulting in cure, and 48 in death. In 41 cases the abscesses were opened through the tegmen, and of these 27 resulted in cure and 14 in death; 37 cases were opened through the squama, and of these 18 resulted in cure and 19 in death. In 22 cases the method of operation is not mentioned, and of these seven resulted in cure and 15 in death.

It seems that the best results are obtained when the abscess can be drained through the tegmen. This is due to the fact that the operator by taking this route has been able to open the abscess along its avenue of infection, thus avoiding the danger of secondary meningitis and of hernia cerebri, since as the result of the infectious process the meninges have been soldered together and the subdural space has been obliterated over a given area.

In the case of brain abscess the operator should first search carefully through the tegmen tympani and tegmen antri, and if such a path is found the diseased bone should be removed. If more space is needed the opening should be enlarged upward and outward through the squamous plate of the temporal bone. In incising the dura this incision should be made through the diseased dura, if possible, as here the membranes will have become adherent. In the absence of any evidence of caries or necrosis of the tegmen tympani or tegmen antri the bone should first be removed here and the dura exposed, as we may find diseased dura underlying apparently healthy bone. Unless the symptoms are urgent Dench states that he is inclined to adopt Mr. Ballance's suggestion of exposing the dura over a proper area, incising this and packing the margins of the wound firmly with iodoform gauze, deferring an exploration of the brain substance for from twelve to forty-eight hours. The brain substance may then be explored with comparative safety and the abscess evacuated without much danger of secondary meningitis.

TUBERCULOSIS OF THE CECUM.

CUMSTON (*Annals of Surgery*, November, 1907) recognizes the ulcerating, the enteroperitoneal, and the hypertrophic forms of tuberculosis of the cecum. The ulcerating forms represent the ordinary intestinal tuberculosis. This form is usually secondary and is noted in patients presenting pulmonary lesions. It may be primary. Individual ulcers may be oval or circular in shape, in the former case with their long axis perpendicular to that of the intestine. Such ulcers do not form stenoses sufficiently narrow to prevent feces from passing. The enteroperitoneal form of intestinal tuberculosis is represented by complete involvement of the cecum, the terminal portion of the ileum, the mesentery and its lymphatic glands. The mucous ulceration extends to the peritoneum, involving this structure and causing circumferential inflammation, resulting in numerous strong adhesions between the gut and the neighboring viscera.

The hypertrophic form of intestinal tuberculosis, which Cumston calls the surgical type, is usually primary. It commonly begins in the cecum, remains there, and has no tendency to invade the ileum. The mucosa often remains healthy; it is at times extensively ulcerated. The direction of extension is along the course of the colon. It presents a bossed aspect recalling that of carcinoma, and may be as large as two fists. There is often placed about it a sclerotic lipomatous mass similar to that surrounding tuberculous kidneys or bladder. All the layers of the gut are thickened, but the hypertrophy is more particularly marked in the subperitoneal cellulofibrous and in the submucous layers; indeed, these two layers form more than two-fifths of the neoplasm. Stricture of the cecum may result. At times the cecum may be dilated. The disease begins in the lymphoid organs, the follicles, and Peyer's patches, this being a lymphatic tuberculosis. Later the lymph nodes are involved, particularly those of the ileocecal angle. Usually the ileocecal valve will be found in a cicatricial mass, it being retracted, indurated, thickened, and superficially involved in an ulcerative process,

with polypoid vegetations here and there. The orifice of the valve may be narrowed or obstructed. The appendix in the late course of the disease becomes involved and may be completely hidden from view. The disease begins slowly, sometimes arising in an otherwise perfectly healthy patient. It is manifested by abdominal pain and intestinal disturbances, the latter consisting of alternating diarrhea and constipation, the abdominal pains appearing in the form of violent colics localized in the region of the cecum. These colicky attacks may be of very short duration, rarely extending over twenty-four hours, after which they subside, leaving some sensitiveness in the abdomen, which is particularly evident in the right iliac fossa. Constipation may be the only symptom when the affection causes stricture of the ileocecal valve. Occasionally the disease begins suddenly with the phenomena of circumscribed peritonitis. In the course of months or years a tumor will be discovered in the right iliac fossa, cylindrical in form and uneven as to surface.

The ulcerative form usually has no tumor, but the inflammatory symptoms are more marked. Fistulæ in the right iliac fossa are late developments. The only distinguishing feature from carcinoma is the slower growth of the tuberculous process, nor is this a reliable sign. Moreover, tuberculosis affects younger people and the Koch bacilli may be found in the stools.

When the tuberculous process is distinctly limited to a portion of the cecum a partial resection of the organ may be undertaken, upon the condition that the intestinal caliber will not suffer from removal of a portion of the organ. If otherwise, complete removal of the ileocecal segment should be undertaken. Tuberculosis of the ileocecal region without tumor formation and giving rise to fistulæ requires the same treatment as tuberculosis with a neoplastic formation, viz., bilateral exclusion of the diseased segment. This operation has been followed by a number of cures, and when this happy result has failed it has later allowed resection, which at the time of the first interference was considered impossible.

Resection is absolutely indicated when there is a tumor without abscess formation or fistula. Under these circumstances it becomes a radical operation because it removes the focus of tuberculosis from the body. If resection is found difficult or dangerous because of extensive adhesions, intestinal exclusion may be preferred. A limited focus in one is not a contraindication to interference with a cecal lesion. If an extensive pulmonary lesion is present, accompanied by an evening rise of temperature, night sweats, and a rapid loss of flesh, any operation on the intestine is contraindicated. This also applies when tenacious diarrhea is present, indicating a diffusion of the lesions in the intestinal mucosa, while a marked albuminuria, indicating a tuberculous nephritis, is also a contraindication.

THE TREATMENT OF INFANTILE PARALYSIS.

LOVETT (*American Journal of Surgery*, November, 1907) finds cause for satisfaction in the thought that in no department of orthopedic surgery has progress been more rapid or more gratifying or more brilliant than in the matter of operative treatment of infantile paralysis. The sudden onset, and the feverish attack generally ushering it in, and its occasional epidemic character suggest an infectious origin. In its complete development it is expressed in the direction of loss of motion, sensation being unimpaired. It is especially liable to develop in the period of early second dentition, three-fourths of the cases beginning in the first three years of life. One leg is involved in two-fifths of all cases; both legs in a little over one-fifth of all cases; the arm and leg of the same side in one-eighteenth of all cases. The arm is involved much less frequently than the leg. The damage done to the motor cells in the anterior horns of the spinal cord is final and cannot be repaired. The peripheral nerves show changes similar to those following simple nerve division. The muscles show atrophy of the parenchyma with conversion to fibrous and even fatty tissue, but the nuclei remain. These

changes appear to be due to non-use, and the persistence of the nuclei shows the possibility of regeneration. The diagnostic signs are as follows: A motor paralysis occurring in young children, generally beginning with sudden feverish onset. The established paralysis is shown by loss of muscular power in all or some of the muscles of a limb, by wasting of the muscles, coldness and blueness of the limb; a loss of tendon reflexes in affected muscles, and the reaction of degeneration in the affected muscles; pain is an occasional accompaniment of the acute stage.

During the stage of onset, which is customarily not recognized as such, there is no efficient treatment. The first weeks of convalescence are always characterized by decided spontaneous improvement. During this stage, which may last for two or three months, much can be done to help the reparative efforts of the tissue cells. Muscles stretched do not recover power as rapidly as do muscles that are not stretched, and a paralyzed foot should be kept at right angles to the leg and not allowed to support the weight of the bedclothes, and thus to be always in a position of plantar flexion. Efforts should be made from the onset to prevent the dangling foot by supporting it in a non-deforming position. As soon as tenderness has disappeared massage and electricity are of great value. Established paralysis—i.e., that existing months or years after the onset—presents two problems which must be met by therapeutic measures: these are contraction deformity and loss of muscular power. The flexor muscles are on the whole less affected than the extensors; hence traction deformities are as a rule flexion deformities. Again, deformity may begin in a limb completely paralyzed, not from unopposed muscular pull, but from the continued maintenance of a vicious position, this resulting in a permanent contraction of the shortened tissues; hence the first and most important principle in the treatment of infantile paralysis is the rectification of the deformity. This in milder cases is accomplished by a series of corrective bandages, or where the distortion is more pronounced.

by tenotomy, fasciotomy, and myotomy. Before beginning the mechanical treatment or tendon transfer, it should be possible, by gentle force, to put the joint in a normal position with the hands. Massage, though of great value at all stages of the affection, does not do away with the necessity of removing deformity or using proper braces. To allow a growing child to walk on a distorted foot is to make a permanent bone deformity quite likely; and the longer practically efficient methods are delayed, the harder it will be to obtain a good result.

Lovett states that infantile paralysis found in the adult or child, no matter how severe or neglected, may be improved by rational treatment, and all but a very few may be made to walk. The object of mechanical treatment is to support the leg in such a way that it may be used for weight-bearing and to prevent and correct deformed positions caused by the lack of important muscles.

It is not uncommon to see muscles apparently paralyzed recover function enough to be of use by means of a suitable brace.

The hope of operative relief lies in the possibility of transplanting insertions of non-paralyzed muscles from the location not needed, or harmful, to a location where they are helpful, to supplement or replace the action of paralyzed muscles. The strictest possible asepsis is necessary to obtain good functional results, for the operation frequently requires a good deal of dissection, long sections of tendon sheath are exposed, many silk sutures may be required (catgut has not been so serviceable), and, in the modern operations, strands of coarse silk of considerable length will often be left under the skin as substitutes for tendons. The operation is preferably performed with an Esmarch bandage and tourniquet. The tendon to be transferred is exposed by a cut near its insertion and is divided transversely. Transferred muscles must not turn short corners, and enough of the tendon must be exposed to insure a straight line of pull between the origin and the insertion of the muscle. The distal end of the transplanted tendon should be inserted

into the periosteum at the desired location. The periosteum is divided by a linear incision and the edges are turned back and a groove is made in the bone deep enough to hold the tendon. The tendon to be transferred is laid in this groove and firmly stitched to the periosteum by two or three stout silk sutures passed by means of a strong curved needle. These sutures pass through both periosteal flaps and the tendon, uniting the whole into one mass. Muscles must be inserted on the stretch, and no point in the technique is of greater importance than this. The foot must be held in an overcorrected position during and after the muscular attachment, and the tendon of the muscle must be tight even in this overcorrected position when once attached. It is not necessary to close by suture the open sheath of the tendon. Skin wounds are closed by catgut sutures. Holding the foot always in an overcorrected position, the tourniquet is removed and the blood allowed to return to the limb; the edges of the incision should become pink before the final dressing is applied. Plaster-of-Paris bandage is put on; this, in case of operation on the foot, should always include the knee, or if the knee has been the seat of operation should include the foot, the latter being held in an overcorrected position. It is possible to use part of a tendon after transfer and to leave part in the original situation. Thus the tendo Achillis may be split in its length for two inches from its insertion, the outer half is freed from the os calcis, and into this freed end may be secured four strands of heavy silk, and this may be carried forward to be inserted into the outer border of the foot, thus prolonging the Achillis.

The development of tendon transplantation has led to the interesting demonstration that a piece of stout silk may be substituted for a tendon when it is too short to reach its insertion or when it must be lengthened. This silk becomes impregnated with and surrounded by tendinous substance until it becomes as good a tendon as any. After having transplanted a tendon to its new position other tendons are investigated. If

slack they are to be shortened either by passing a quilting suture in their length or by cutting out a piece and uniting the cut ends. If the tendons are too tight they should be lengthened either by a plastic tenotomy or by cutting the tendon, allowing it to separate, and connecting the two ends by stout silk sutures, which will in time be covered by tendinous material.

It is important so far as practicable to restore the normal balance of the muscles of the foot.

In tendon transfer the after-treatment is quite as important as the operation. Following surgical intervention there should be a period of two or three weeks rest in bed in the horizontal position. Plaster bandage is worn from six to twelve weeks, and is then split and removed temporarily to allow measurement for some supporting brace to prevent strain from coming on the new tendon, or the split plaster is used as a walking splint, holding the foot still in its overcorrected position. Daily massage and light exercises for the new tendon should begin at this period, the plaster being removed daily for the purpose, and not for at least six months after operation should strain be allowed to come on it.

The more nearly the transferred muscle approximates in function the one for which it is substituted, the better will be the result. For instance, one of the peroneal muscles makes an excellent substitute for the posterior tibial, but a poor substitute for the anterior tibial, the latter being a dorsal flexor. Flexors are better substitutes for flexors than they are for extensors, and *vice versa*, though this rule Lovett states does not hold for the knee, when in paralysis of the extensors of the thigh the hamstring tendons may be carried forward with good results. If these are not available and the sartorius is active, it may be sewed into the patella and supply extensor power. As for nerve transference, the operation has hardly established itself as a recognized surgical procedure, being still in the tentative stage. Of the twelve cases recorded by Murphy, there was improvement of motion in five following operation.

Arthrodesis, or the formation of an arti-

ficial ankylosis, is an operation frequently performed in joints that have lost all power and that are useless on account of their instability. The operation finds its chief use in the ankle. Arthrodesis of the ankle should not be done in young children as very serious distortion of growth will sometimes follow. Nor is arthrodesis of the joint between the astragalus and tibia enough, for the other joints are likely to relax and abnormal mobility may return even with the astragalus firmly fastened to the tibia. When the operation is performed, not only should the joint between the astragalus and tibia be destroyed, but also the joint between the astragalus and the os calcis and the astragalus and the scaphoid; in very relaxed cases the joint between the cuboid and os calcis should also be stiffened.

The operation consists of an incision exposing the joint, and the removal of the joint cartilage from both surfaces of the articulation by a chisel or heavy knife. The wound is then closed and the joint fixed in plaster of Paris for two or three months.

Arthrodesis done with a view to making apparatus unnecessary is an operation indicated only in cases of complete paralysis, when tendon transplantation is not available.

TONSILLAR HEMORRHAGE—SURGICAL TREATMENT.

JACKSON (*Annals of Surgery*, December, 1907) concludes after a study of this subject that tonsillectomy is less likely to be followed by hemorrhage than is tonsillotomy.

Oozing after tonsillectomy is exceedingly rare. It is bleeding from a vessel concealed back of the anterior pillar that is usually mistaken for oozing.

The use of ice to the neck and face, or locally over the wound, and other hemostatics, is unsurgical and liable to be followed by secondary hemorrhage.

A gauze sponge pushed into the cavity left by the removal of the tonsil will stop slight bleeding, but should never be used when the bleeding is from a vessel large enough to be twisted. If there is not a

sufficient cavity to permit the retention by the anterior and posterior pillars of a gauze sponge the size of a walnut, the tonsil is not all out, and the operation is incomplete.

Hemostasis with hemostats, promptly done while the vessels are plainly visible by their bleeding immediately after they are severed, promptly arrests hemorrhage and the torsion forestalls secondary hemorrhage.

Any hemorrhage not controllable by torsion can be and should be immediately stopped by rendering the whole area anemic by the ligation of the external carotid artery.

An anterior pillar retractor and a few long hemostats are an absolute essential to every tonsillectomy armamentarium.

TEN CASES OF CHRONIC JOINT DISEASE TREATED WITH TUBERCULIN INJECTIONS BY WRIGHT'S METHOD.

RIDLON (*Chicago Medical Recorder*, November, 1907) as the result of his study on this subject closes his article with the following conclusions:

A low tuberculo-opsonic index with local joint symptoms may be accepted as evidence of joint tuberculosis. But a practically normal tuberculo-opsonic index, together with local joint symptoms, neither proves nor disproves joint tuberculosis.

When the diagnosis of joint tuberculosis has been made a high tuberculo-opsonic index should be maintained, if possible.

With a high tuberculo-opsonic index an operation for the removal of all or part of the local disease may be undertaken; not so with a low index.

If use of the diseased joint lowers the opsonic index, the joint must be protected; if it does not lower the index, it may be permitted; if it raises the index, it should be insisted upon.

General elevation of the temperature following a tubercle injection indicates too large a dose. A persistent lowering of the index during treatment by tubercle injection indicates that the injection has been given at the wrong time, during what Wright calls the negative phase, instead of during the positive phase.

While the time has been too short and the patients too few to predict ultimate results, the fact that the results thus far have been by no means brilliant should be taken as encouraging rather than discouraging. Ridlon believes the tubercle injection treatment guided by the tuberculo-opsonic index to be a most promising step in advance in the treatment of tubercular joint disease.

THE CURE OF EPITHELIOMA BY THE ROENTGEN RAY.

SCHIFF (*Lancet*, Nov. 23, 1907) after an elaborate study bearing upon these cases and the collection of between 1600 and 1800 cases of epithelioma which had been treated by the Roentgen rays, formulates the following conclusions:

The favorable effect of Roentgen rays on epithelioma is indisputable. The treatment with Roentgen rays must not, however, be considered in a category by itself; it must rather be looked upon as an alternative or as an addition to treatment by other methods. There are obviously biological differences in the various kinds of epithelioma which have so far not yet been sufficiently explained pathologically and anatomically, and on which the success of the Roentgen treatment is dependent. To aid the effect produced by the Roentgen treatment small operations may be done and the cautery applied according to the nature of the case. In those cases in which no favorable influence is produced by the Roentgen rays, at the latest after the fourth or fifth sitting, this treatment must be discontinued, as little more is to be expected from it. The intervals between the single sittings must not be too long; a more active Roentgen light—medium soft tube—with, of course, a careful covering of the healthy parts of the skin, is to be recommended. In the case of surgical operations a subsequent application of rays is eventually desirable. It is of especial importance to lay stress on the fact that by the application of Roentgen rays the patient is saved from an operation, and the result produced by the Roentgen treatment is not only equally good as regards the cure but much better as regards the subsequent appearance.

REVIEWS.

ABEL'S LABORATORY HANDBOOK OF BACTERIOLOGY. Translated from the Tenth German Edition by M. H. Gordon, M.A., M.D. Oxon., B.Sc. With Additions by Dr. A. C. Houston, Dr. T. J. Horder, and the Translator. London: Henry Frowde, Hodder and Stoughton, Oxford University Press, 1907.

This little book of 224 pages is a kind of a pocket volume convenient for those doing laboratory work. It contains twelve chapters, discussing the microscope, preparation of media, culture and staining methods, including brief descriptions of some twenty-five pathogenic bacteria, yeasts, molds, and animal parasites. To the original edition in German have been added chapters by Dr. Horder on methods of obtaining material, by Dr. Gordon on methods of examining blood in relation to immunity, and on dust and air, and by Dr. Houston on the examination of water, milk, shell-fish, vegetables, sewage, etc.

The technical details given are concise, indeed rather brief, but correct. The descriptions of the various bacteria are, as a rule, too brief for satisfactory identification. The blank pages at the end of the book are supplied for recording additional data.

The typography is good and the binding suitable for use in the laboratory.

W. M. L. C.

BIER'S HYPEREMIC TREATMENT IN SURGERY, MEDICINE, AND THE SPECIALTIES. A Manual of its Practical Application. By Willy Meyer, M.D., and Prof. Victor Schmieden. Illustrated. W. B. Saunders Co., 1908. Price \$3.00.

A very timely monograph, dealing with a matter which is of very great interest both to physicians and surgeons, has been prepared by an active practitioner of surgery in New York, and by an assistant to Professor Bier of the University of Berlin, who is, therefore, able to present in full the personal views of that well-known surgeon. The book is copiously illustrated and is made up of twelve chapters. In the first of these the advantages of the hyperemic

treatment over other methods are well presented; in the next the methods of inducing hyperemia are described; and in the third chapter the general rules for the use of this remedial measure are discussed. From this part on the chapters are devoted to the treatment of special diseases by means of artificial hyperemia. Chapter IV deals with the hyperemic treatment in surgery, and covers 75 pages; Chapter V discusses hyperemic treatment in medicine, Chapter VI its use in gynecology and obstetrics; the seventh chapter deals with its employment in genito-urinary surgery, and the eighth with its use in otology. The remaining four chapters discuss the treatment of disease by hyperemia in ophthalmology, diseases of the nose, throat, and larynx, in neurology and psychology, and finally in dermatology. The latter chapters are all of them exceedingly brief. The book closes with a few concluding remarks, in which the authors are careful to point out that while they believe that this plan is an exceedingly useful one in many conditions, it is not in any sense a cure-all, and like all other remedial measures must be applied with careful attention to the pathological processes which are present and the needs of the individual case. As a summary of this important therapeutic method, it should be in the hands of every active practitioner.

CHRISTIAN SCIENCE: THE FAITH AND ITS FOUNDER. By Lyman P. Powell. G. P. Putnam's Sons, New York, 1907.

Mr. Powell is the Rector of St. John's Church, Northampton, Mass. He tells us in his preface that this subject has long engaged his interest, and that for years he discouraged none who sought its healing ministry. He has also felt that indiscriminate censure of the practices of Christian science manifested prejudice, but further study of the subject has brought him

to three conclusions: First, that if members of a Christian church turn to Christian science healing they usually turn away from historic Christianity; secondly, that there are in the theory of Christian science certain structural weaknesses which may easily be overlooked by people unschooled in philosophy, theology, or science; and thirdly, that the answers of the accredited exponents of the movement to the criticisms which are steadily gaining headway satisfy none save Christian scientists and such others as read carelessly and think loosely. The Reverend Mr. Powell, therefore, prepared a booklet, for which there came to be a large demand from all parts of the country, and later, at the request of the publishers, he expanded this into the book which we now have before us. He has obtained a large amount of information from many persons, medical and lay, and he concludes that he is able to present facts which will convince people that it is perilous to commit themselves to this crude faith, which is repudiated with indignation by historic Christianity and with contempt by Science, without a clearer understanding than is common of its insecure foundations and its inevitable implications. More than thirty pages are taken up at the close of the volume with notes and bibliographical references to material in the text. To those physicians who are interested in this subject, particularly as it is illustrative of the vagaries of the human mind, we can recommend this book as a thoughtful analytical study of one of the curious pseudo-religious manifestations of modern times.

THE TREATMENT OF INTERNAL DISEASES. For Physicians and Students. By Dr. Norbert Ortner. Edited by Nathaniel Bowditch Potter, M.D. Translated by Frederic H. Bartlett, M.D. J. B. Lippincott Co., Philadelphia, 1908.

Dr. Potter's volume represents the fourth edition of Professor Ortner's Lectures upon Therapeutics in the University of Vienna. Space is devoted to prophylaxis and also to the pathological physiology of the diseases which are discussed. Much emphasis is laid upon mechanical, dietetic, climatic, hydrotherapeutic, and other extra-

medicinal methods, and the translator has altered the prescriptions to conform to the U. S. Pharmacopœia, and equivalents in the English scale of measures have been introduced side by side with the metric quantities. Some of the American medicinal waters have been included. The additions, criticisms, and suggestions made by Dr. Potter have been marked by brackets, and he has also added a chapter upon the treatment of neurasthenia. Curiously enough the American editor considers that the one fault of the original book is the profusion of prescriptions and the author's apparently perfect trust in many drugs. Dr. Potter rather arrays himself against this therapeutic optimism. Many useful therapeutic hints are to be found in the volume, and much information is given in regard to the employment of many of the newer drugs which have been prepared by German chemists. The book is not suitable as a text-book for students, but will prove interesting and valuable for collateral reading to this class of medical men, and to active practitioners, to whom it can be well recommended.

AN AID TO MATERIA MEDICA. By Robert H. M. Dawbarn, M.D. Fourth Edition, Revised and Enlarged by E. V. Delphey, M.D. The Mac-Millan Co., New York, 1908. Price \$1.75.

Truly the millennium is approaching when a book upon Materia Medica is prepared by a Professor of Surgery. The present volume is an exceedingly small contribution to the literature of this subject—so small that it can be slipped into the side pocket of an ordinary sack coat. It presents in tabular form all the drugs and preparations recognized in the present Pharmacopœia, with their doses expressed in the apothecary and metric systems, along with the exact composition and strength of all preparations. It also gives the synonyms and pronunciations of the names of drugs, and, when they are derived from the vegetable kingdom, their derivation and habitat. A table of the solubility of chemicals in water and alcohol is also included. In other words, the book is a small compilation of a large number of facts in materia medica,

and practically contains little or no therapeutics. It is, therefore, best suited to students during their first year of medical work.

AN INDEX OF TREATMENT BY VARIOUS WRITERS. Edited by Robert Hutchison, M.D., F.R.C.P., and H. Stansfield Collier, F.R.C.S. Revised by Warren Coleman, M.D. William Wood & Co., New York, 1908.

We are told in the preface by the English editors that this work is intended to provide the practitioner with a complete guide to treatment in moderate compass and in a convenient form for reference. No less than 75 contributors have written articles for its pages, which resemble very closely in their form and typography the year-book of treatment which is published by E. B. Treat & Co., of New York. It is evident at once that much has been attempted in small space when the statement is made that the book contains only 855 pages of text. The text is arranged in alphabetical order, and the advice which is given is conservative and excellent. A number of illustrations are introduced to make the text easily applicable to practical medicine and surgery. Occasionally a prescription embodying the author's views is interjected. The American editor has revised the text in such a way as to make it conform with American usage and American pharmaceutical preparations.

DIETS IN TUBERCULOSIS. By N. D. Bardswell, M.D., M.R.C.P., and John E. Chapman, M.R.C.S. Henry Frowde, Oxford University Press. London, England, 1908. Price \$2.50.

This is a very small book which would ordinarily be published in this country at the cost of about a dollar, the present price being due, we presume, to the duties which are charged upon it. The chapters deal with the general principles of diets for consumptives with the comparative economy of various foodstuffs, with observations in the treatment of consumptives, with meat-free diets, with practical suggestions as to the directions to be given to out-patients as to diet, and also with preliminary remarks upon the diets of poorer classes and the

diets for working classes in sanatoria. The book is really an abstract of the communications made by its authors to the Proceedings of the Royal Society, and embodies investigations which they have made under a grant from the Royal Society.

THE INTERNATIONAL MEDICAL ANNUAL FOR 1908. A Reference Handbook of Modern Therapeutics and Treatment. E. B. Treat & Co., New York, 1908. Price \$3.50.

We have year after year called attention to this excellent publication in terms of praise. The present volume is exactly like its predecessors, is well illustrated, and presents a large amount of valuable information to those who have not been able during the year to keep up with current literature. The limited space between its covers prevents an exhaustive discussion of many points, and the volume is marred at the close by the running in of an advertisement in such a way as to make it resemble the rest of the text. To those who have had the book in previous years it is sufficient to say that it maintains its standard, and to those who have not had it we would state that its contents are well worth the price which is charged for it.

A MANUAL OF DISEASES OF INFANTS AND CHILDREN. By John Rührh, M.D. Second Edition. W. B. Saunders Co., Philadelphia, 1908. Price \$2.00.

This is a very excellent short manual on pediatrics covering less than 500 pages, and discussing the subject of the nutrition of children and their disorders in a clear, concise manner. It is amply illustrated, and while the illustrations are not as well executed as is common in the publications of this house, they all of them are appropriate and instructive, with the exception perhaps of Fig. 22, designed to illustrate the characteristic attitude of the legs in infantile scurvy, an outline drawing which, from its legend, would seem to indicate that every infant, when taking its bottle, is affected by this disease. The book closes with copious references to standard works, and a bibliography which covers several pages of fine print.

CORRESPONDENCE.

LONDON LETTER.

BY G. F. STILL, M.A., M.D.

For a month or more influenza has been raging in London, and accounts have varied as to its severity in comparison with the disease seen in other epidemics in previous years. Amongst children I think it has been mostly of a mild type, though I have seen some severe cases. In older people there seems to have been the usual protean variation of type: some have had gastric symptoms, most have had some pulmonary symptoms, and there has been the usual crop of nervous sequelæ, with here and there a suicide from the intense mental depression. But during the last week or two the epidemic has abated, although in some parts of the country there still seem to be many cases.

Dr. Hall Edwards, of Birmingham, has been the recipient of much public sympathy during the past few weeks, after suffering amputation of one hand and being in danger of requiring amputation of the other also, for an epitheliomatous condition of the skin of his hands, induced by exposure to the x-rays. A fund was inaugurated in Birmingham to provide him with an income, as he is unable to earn his livelihood owing to the disease in his remaining hand. This fund has already reached the sum of eight hundred pounds, and it has just been announced in the House of Commons that the King has been pleased to confer a civil list pension of £120 per annum on Dr. Hall Edwards. Every one must rejoice at this recognition of the self-sacrifice which a scientist's life may entail, but those who know most of what happens to workers in medical science will only wish that such recognition were more frequent, for there have not been lacking in London during the past few years instances of not less noble devotion to the interests of humanity by workers in pathology and other branches of medical science.

Miss Florence Nightingale, who became famous for her noble efforts to improve the nursing of the sick and wounded in time of war during the Crimean campaign, is now eighty-eight years of age, and it has just occurred to the civic powers to confer upon her the honorary freedom of the city of London. Sir Joseph Dimsdale, the city chamberlain, formally asked her relative who attended as substitute for Miss Nightingale, whose age and ill health prevented her from attending in person, to receive the casket containing the resolution of the corporation; and in the course of his speech he said it was to be regretted that owing to some unexplained omission on the part of a previous generation the honorary freedom—the highest honor in the gift of the corporation—was not conferred upon her half a century ago, when she was in health and strength and able thoroughly to appreciate and enjoy it. He described in eloquent terms the call of Miss Nightingale to the battle-fields of the Crimea, the awful scenes which awaited her there, and the noble devotion of Miss Nightingale and her associates to the relief of the suffering soldiers, and ended by saying that while there were many great leaders and warriors upon the roll of fame of the city of London, no name would shine brighter in coming ages than that of Florence Nightingale.

For the second time an annual conference is being held in London on the subject of infantile mortality. The Right Hon. Mr. John Burns, president of the Local Government Board, is president of the conference, and accordingly delivered the opening address, during which the ubiquitous suffragettes made an attempt to interrupt the meeting with their usual lack of all womanly modesty, and were only silenced by being ejected. Mr. Burns spoke hopefully of progress made and to be made in legislation for the protection of children. He said that relatively infant mortality was decreasing in London; that public houses were bad for

men, worse for women, and intolerable for children; and he hoped not only infants but also older children would be excluded by law from public houses. He mentioned the well-known fact that a very large proportion of the cases of children found dead in bed occurred during Saturday, Sunday, or Monday nights, a fact explained partly by the drunkenness of Saturday night, but partly in his opinion by the habit amongst the working classes of taking their infants out late at night on those days whilst marketing or visiting their friends; the young child kept out in the cold night air often till midnight was likely to suffer from some acute catarrhal condition.

It is remarkable that in all these discussions on infantile mortality, although there is much talk about a declining birth-rate, no one says a word against the recklessly improvident marriages which are responsible for a very large part of the squalor and poverty amongst the lower classes in this country, and which in this way keep up an infantile mortality, which may possibly be less harmful to the nation than some ardent philanthropists imagine. There is doubtless a heavy falling off in the birth-rate in this country amongst the well-to-do middle class and the wealthy, and probably even amongst the comfortably situated middle class; but I know of no evidence whatever that amongst the poorest class there is any diminution of birth-rate—it is probable that there is rather an increase. But so far from hinting at any desirability of self-restraint amongst these improvident poor, one speaker, referring to the mortality of illegitimate children, recommended that a state institution should be founded which would "receive without question any child that was offered, because every infant if properly reared and trained would be a valuable asset to the nation." The wildest schemes of socialism could hardly surpass this, but it is on a par with much of the impracticable talk which diluted some admirable and thoughtful speeches at this conference.

Medical men have been figuring largely in the police courts lately. The well-known

authority on mental diseases, Dr. Forbes Winslow, has just been fined fifty pounds for a breach of the Lunacy Act, in persuading a woman to receive into her house without a proper license a female lunatic. The defense was that it was not known that the patient was a lunatic; but as the patient's mental unsoundness was quite obvious the prosecuting counsel said it was incredible that a lunacy expert should have been ignorant of it, and that if he was, his opinion as an expert was of no value. It was rightly pointed out that Dr. Winslow had given his services gratuitously to this patient, so that it was particularly hard that he should be proceeded against for a mere technical breach of act of Parliament.

Another case in which a doctor has recently appeared in the dock was that of a general practitioner in London who was sued by a husband for alleged negligence in treatment resulting in the death of the plaintiff's wife. The negligence alleged consisted in the defendant not having prescribed a milk diet and having allowed the patient to drink alcohol when she was suffering from Bright's disease. The jury soon intimated that they had heard enough, and were of opinion that there should be a verdict for the defendant.

A distinguished surgeon has passed away this month in Sir Alfred Cooper, who was consulting surgeon to the West London Hospital and also to St. Mark's Hospital for Fistula; he was also surgeon-in-ordinary to the late Duke of Saxe-Coburg Gotha, and was at one time medical attendant to the present King when Prince of Wales. He was a favorite with many distinguished members of the nobility.

Another death in ripe old age is that of Dr. Mapother, who passed away in London recently at the age of seventy-three years. He was president of the Royal College of Surgeons in Ireland in 1879.

A congress on sleeping sickness has just been held in London, at which many authorities on tropical diseases were present. The Lord Mayor entertained the members at luncheon at the Mansion House.

RHUS POISONING.

To the Editor of the *THERAPEUTIC GAZETTE*.

SIR: In the April number of the *THERAPEUTIC GAZETTE* you have an editorial on "Rhus Poisoning." In this locality we have, each spring and summer, quite a number of cases, and I wish to call your attention to a very simple remedy which is practically a specific for it—a hypersaturated solution of sulphite of soda in water, so that when the water evaporates the parts look as if they have been whitewashed. It causes no irritation, and relieves the burning, itching and swelling in twenty-four to forty-eight

hours, and complete recovery takes place in severe cases in three or four days longer. I have used it when the eyes have been completely closed by the intensity of the swelling. As you have probably noticed in some patients who are extremely sensitive to rhus poisoning, there is a return of the eruption every spring. The sulphite of soda prevents this return and cures those patients who have the return.

Believing that the above may be of some interest to you, I am,

Yours respectfully,

BLACKVILLE, S. C. DAVID K. BRIGGS.

NOTES AND QUERIES.

THE "BULLETIN OF THE AMERICAN PHARMACEUTICAL ASSOCIATION" AND LEGITIMATE PHARMACY.

The following text is part of an editorial in the *Bulletin of the American Pharmaceutical Association* for March, 1908. It is of interest in view of the assaults made by some druggists on the prescribing habits of physicians:

"While it is agreed that there is no reason why trade should not be ethical, yet trade, as a matter of fact, is not ethical, and therefore the necessity for its restriction and regulation by law.

"A profession is ethical *per se*, and fundamentally is distinguished from trade in this very particular, that while a profession is governed by a code of ethics, trade is governed by law. A code of ethics is the formulation of certain fixed principles gradually developed and established as rules to guide those engaged in a professional occupation. It is the expression of the profession itself and relies for its support on its own members, while a law is the more concrete expression of all the people through its representatives and depends on the State for its enforcement.

"In the multifarious service required by the public there can be no sharp lines of demarcation between trade and profession

as they necessarily impinge on each other, and in no occupation more so than in pharmacy. And yet there are distinctive phases of both concerned in pharmaceutical practice, so much so that they must both be considered, if not coequal, yet both of such importance that one cannot be considered without the other. Despite Federal legislation in that new field, Food and Drugs, the old-time slogan 'Caveat Emptor' ('Let the buyer beware') still holds good, is in fact the fundamental or basic principle of the recent law. It is because of this trade principle that foods, and especially drugs, are allowed to be sold below the standard purity and strength, if only in conformity with the standard professed. Thus, a drug like tincture of opium may be sold of any strength if the particular strength is specified, no matter if it should fail to save life because too weak or destroy life because too strong.

"The fundamental principle here is one of trade purely, and no professional principle would be here applied. Charged with the service of furnishing medicine to those who are entirely unfamiliar with the article, the pharmacist must supply that which is safest and best irrespective of any other consideration. Only in so far as he steadfastly maintains this position is he a professional man; without it he is not a professional man, but

a trader and huckster, a shyster who should not be permitted to serve the public in any such serious capacity as selling medicines. He may sell clothing, jewelry, or even food, because presumably he will be found out, and besides, 'caveat emptor.'

"As a druggist he may sell similar merchandise according to the 'laws of trade,' whatever they may be—buying the cheapest goods and selling at the highest prices or at the lowest, as he fancies, or selling the most costly goods at the highest prices or giving them away, as appears to him the best policy. But the flim-flam methods of the cut-rate joint or department stores do not pay in the long run, and the only safe plan is to sell the best quality of merchandise at a moderate profit. To seek a profit of more than 50 per cent on sundries, such as toilet articles, soaps, perfumes, brushes, is suicidal, but hygienic syringes, water-bottles, etc., should afford a greater profit.

"Articles requiring skill and experience, as in fitting trusses, should always afford a large profit, since these are not merchandise in the ordinary sense and become useful only according to the service rendered, and this professional service should be well paid.

"Proprietary medicines, at least of the kind called 'patent medicines,' are simply merchandise, and as such must be governed by the laws of trade. While those containing alcohol and certain habit-forming drugs are required for interstate commerce to be so labeled, this concerns the manufacturer and wholesale dealer more than the retail pharmacist. These are sold as bought, and only in such as are supposed to be of a dangerous character is the purchaser warned, presumably on the supposition that he will realize whether or not the medicine is safe to use when the presence of these particular substances is noted on the label. It is on this same principle that the law permits foods to be sold as a rank deceptive substitute for butter, or sugar, preserved with some anti-fermentive or anti-putrefactive agent, so

long as the purchaser is advised of the name of the substitute or the preservative.

"Here again it is the 'caveat emptor,' or, in plain English, 'look out for yourselves,' and not 'caveat venditor' ('let the seller beware!'). These are the laws, and the laws are seldom what they ought to be, but are makeshift compromises with trade. The legislators give ear to the business interests while they give the people the laugh. The politician follows the music wagon led by the notes of the venal press—always alert for the moneyed interests and vested rights and let the public be d—d. This is the fundamental difference between a law and a code of ethics which represents the best ideas there are in a profession, and nothing but the moral sentiment of its members is behind it. The only profession which is able to enforce its code is the legal profession, since it brings the violator to the bar and expels him. Equally heinous crimes are committed in medicine as in law, and yet seldom is a physician brought to the bar of justice for violating the code of ethics unless he also happened to come in conflict with the criminal code! He may be expelled from the medical society, but his license to practice is not revoked.

"A code of ethics is believed essential to all engaged in professional work, and has been so regarded from time immemorial. Ethics from Aristotle and Plato to James Stuart Mill, Herbert Spencer, or Kant, resolve themselves into 'the consciousness of obligation.' Every human being possesses this consciousness in some degree, but cannot be depended upon to formulate it for various reasons. It is the basis of all religions, and in its simplest form it is expressed in 'The Golden Rule.' While civilized communities may be depended upon to enact laws which apply ethics to the grosser relations of individuals, they cannot be expected to fix definitely into statutes the finer shadings of the obligations which exist between a professional man and his patrons."

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ORIGINAL COMMUNICATIONS.

THE LOCAL USE OF MAGNESIUM SULPHATE SOLUTION IN THE TREATMENT OF ERYSIPELAS, WITH REPORT OF CASES.

BY HENRY TUCKER, M.D.,

Surgeon to Genito-urinary Department, Philadelphia General Hospital.

On account of the uniformly good results obtained in my wards at the Philadelphia General Hospital in all varieties of inflammation treated by this method, I was enabled through the courtesy of Dr. Joseph S. Neff, director, to apply this plan of treatment to the erysipelas cases.

The following series that are reported in full were either of an exceptionally severe infection or were complicated by some grave condition; the remaining cases were uncomplicated and are merely given as a matter of record.

Case 1.—J. Q., admitted on the fifth day of the disease. Incontinence of urine and feces; delirious; face violaceous; covered with crusts; purulent conjunctivitis. Swelling subsided and all symptoms relieved in three days.

Case 2.—F. S., aged three years. Erysipelas of cheek and gonorrheal vaginitis; temperature 101°. Child relieved in twenty-four hours; temperature normal; all local symptoms disappeared at the end of the third day.

Case 3.—R. R. Erysipelas of the face complicating a scalp wound; the wound dressed antiseptically and the solution applied to the face; all local signs cleared up within thirty-six hours.

Case 4.—S. S., admitted delirious. History of anuria for two days. Facial erysipelas; scalp also involved; diffuse bronchitis; acute parenchymatous nephritis. Given diuretic lemonade enteroclysis; hot stupes

over the region of the kidneys; magnesium solution applied. Two days later patient markedly better, mind clear, a fair quantity of urine being voided, and local color beginning to fade; the following day temperature dropped to normal; local symptoms entirely relieved.

Case 5.—M. S., aged fifty. Erysipelas of face and scalp; glands of the neck swollen and tender; face and ears covered with crusts; lungs congested at bases; acute desquamative nephritis; case incontinent, delirious. Fourth day, mind clear, desquamation beginning; temperature normal. Sixth day, face again became red; urine diminished; temperature rose to 104°. Mask reapplied. The following day all symptoms again subsided; urine increased in amount. Kept in bed several days on account of nephritis.

Case 6.—T. S., aged twenty. Facial erysipelas; acute bronchitis; urine loaded with albumin and casts; glands of the neck greatly swollen; ears distended with serum; numerous blebs on face; violently delirious; incontinence of urine and feces; temperature 104°. Three days after admission, mind clear, tongue clean and moist; local redness subsided; temperature normal.

Case 7.—E. S. Erysipelas and delirium tremens. Erysipelatous condition cleared up in two days, but the redness faded slowly. The mind clear the fifth day after admission.

Case 8.—J. A., negro. Erysipelas involv-

ing right side of face and ear, sharply demarcated; mitral disease with hypertrophy complicated this case. Temperature 106° on admission; pain relieved in twenty-four hours; patient comfortable; lesion did not extend. Full recovery at end of the third day.

Case 9.—E. C., female, aged sixty. Facial erysipelas and advanced myocarditis; ill two days prior to admission. Temperature normal and all local symptoms relieved in twenty-four hours.

Case 10.—M. Mc. Erysipelas following a contusion of the nose. The following day all constitutional and local symptoms had abated; third day fully recovered.

Case 11.—J. W. Entire face involved, resulting from an injury during a debauch; the following day the local lesion disappearing rapidly; pain entirely relieved. Discharged cured on the fourth day.

Case 12.—R. D. Erysipelas of the face and forearm. The infection commenced on the left forearm; two days later the face became involved. On admission both eyes tightly closed. The day following, comfortable and able to open eyes; two days later the local condition approaching normal. Discharged on the fifth day.

Case 13.—J. O'N. Condition the same as in Case 11; entirely well on the fourth day.

Case 14.—J. K., admitted with slight pain; swelling and redness of both legs, extending rapidly from ankles to knees. The following day all local symptoms had disappeared.

Case 15.—F. S. Transferred from the medical ward. History, pneumonia and pleurisy with effusion. Temperature 103°. Scalp, neck, left cheek, and eye involved. Fourth day, process limited; area less bright in color and margin not so sharply defined. Sixth day, resolution well advanced. Eighth day, well.

Case 16.—R. R. Malignant growth of lower jaw complicated by extensive erysipelas; the erysipelatous condition cleared up on the third day, but the patient died from

exhaustion on the seventh day after admission.

Case 17.—M. McC. Transferred from the medical ward. Chronic interstitial nephritis; aortic and mitral disease; marked edema of the legs and back. Erysipelas of the left leg and thigh and anterior surface of the right leg. The next day the affected area had lost its bright-red color; swelling less; edges not so well defined. On the third day the patient became very much weaker and died.

Case 18.—A. K., aged sixty-seven. Chronic interstitial nephritis; arteriosclerosis; myocarditis complicated by facial erysipelas; marked dyspnea. The case did not improve, and patient died on the fourth day.

Case 19.—M. S., aged sixteen months. Face and anterior half of the scalp involved. This case is reported in detail to show the rapid reduction of temperature and pulse that frequently occurs. Admitted 3.15 P.M., axillary temperature 104°, pulse 140; 5 P.M., temperature 101°, pulse 130; 8 P.M., temperature 101°, pulse 110; 11 P.M., temperature 98°, pulse 110. Temperature did not exceed 99° after the first day; entirely well on the fifth day.

In thirty-five uncomplicated though severe cases, all recovered within from two to seven days; pain and the usual local discomfort was relieved in a few hours, no internal or so-called specific treatment being given.

In the entire number of cases above quoted internal treatment was not used unless urgently indicated by some complication, so the local application must have the credit for the results obtained.

TECHNIQUE.

The application consists of a saturated solution of magnesium sulphate in water. This is applied in facial cases on a mask consisting of from fifteen to twenty thicknesses of ordinary gauze, of sufficient size to extend well beyond the area involved, a small opening being made to permit breathing; no opening, however, is cut for the eyes. The mask is then thoroughly satu-

rated with the solution, applied and covered with oiled silk or wax paper and wet as often as necessary to assure a moist dressing—usually once in two hours, depending on the time of year, or the temperature of the room. The dressing should not be removed oftener than once in twelve hours to permit an inspection of the parts, and then immediately reapplied; the infected area should not be washed while the treatment is employed. The advantages of this form of treatment over others are as follows:

First, the drug can be obtained in any country store, is easily made into solution, is inexpensive, non-toxic, and clean; it is also easy of application if the directions are properly followed.

Secondly, the patient very promptly obtains relief from the distressing local symptoms usually present.

Thirdly, the temperature rapidly falls to normal, usually during the second twenty-four hours, and does not rise again, thereby eliminating possible complications from fever.

Fourthly, internal medication is not indicated in uncomplicated cases, the only treatment being a milk diet for the first few days, or, to be more accurate, until the temperature reaches normal.

How the results are accomplished I must frankly admit I do not know, but having used this method in over seven hundred cases of various forms of inflammation with uniformly good results, I feel justified in considering it the best local treatment in any variety of inflammation, especially as the greater number of cases treated in the hospital represent absolutely the worst class from a physical standpoint, belonging to the lowest strata of humanity, poorly fed, anemic, living normally under the worst hygienic surroundings, and many of them users of alcohol to excess. The results obtained in private practice should be uniformly successful.

In conclusion I wish to express my thanks to Drs. King and Peterson, internes in the hospital, for the interest displayed in this work.

HYPERSUSCEPTIBILITY OF MAN TO HORSE SERUM.¹

BY FRANKLIN ROYER, M.D., PHILADELPHIA,
Formerly Physician in Charge of the Municipal Hospital of Philadelphia.

The history of the use of blood or of some of its elements in the treatment of disease in the human being covers approximately a period of two hundred and fifty years. The first attempt recorded in medical literature to use alien blood, according to Landois (*Eulenburg's Realenzyklopädie*, 3 Auflage), was made by von Denis, June 15, 1667. A lamb's blood was used; the operation was not completely successful. The practice seems to have been gradually discontinued, and the literature for the latter half of the seventeenth century contains nothing in reference to the use of blood as a therapeutic agent. Early in the nineteenth century, however, the use of blood was again resumed, and we find many articles on the subject in German and French literature.

Soon after the wider use of blood by transfusion was begun dangers were discovered, chiefly fever coming on some days after transfusion, embolism, hemorrhagic purpura, and hemoglobinuria. No scientific explanation of these disturbances had been pointed out until in the years of 1873 and 1875 Landois and Ponfick attempted a full explanation of the phenomena. They showed that the blood of alien species caused solution of the corpuscles when brought into the circulation. Hamburger and Moro in 1903 showed that the injection of alien serums into man results in the formation of precipitins.

The first note of skin eruption seems to have been made by Dalera, an Italian observer, in 1874. He records having seen urticarial eruptions on the skin ten days after transfusion. His further observation

¹Read before the Pediatric Society of Philadelphia, April 14, 1908.

would seem to show that he also found blood-corpuscles of the injected blood in the blood of the recipient. Mendorfer and Landois made notes of the frequency with which these skin eruptions followed transfusion. Leubinski (1894) gave the first clinical report of urticaria due to blood serum.

Hartung was the first to show that the cause of the skin lesion was in animal individuality and not in bulk of blood transfused or content of blood.

Bujwid in 1897 pointed out that fresh serum shows greater toxicity than old serum.

Hamburger showed the variations in the length of intervals when serum was given intravenously and subcutaneously.

An entirely new page of history was written when von Behring discovered a method of making diphtheria antitoxin. From the time of his memorable work until the present volumes have been written on serum therapy, and hundreds of articles note the unpleasant symptoms sometimes developing after serum has been used.

The monograph of von Pirquet and Schick, in 1905, based on work done in the Children's Hospital in Wien, and designated "Die Serumkrankheit," pointed out all of the phenomena developing after horse-serum injection into man, and also called special attention to the reaction occurring after repeated injections. This classic monograph is profusely illustrated with charts, full of abstracts and histories, collates much experimental work, and reviews the literature of serum and blood therapy up to 1905, the time it was written.

Since that time a number of men have studied hypersensitization further from an experimental standpoint, notably Otto, von Pirquet and Schick in Germany; Rosenau and Anderson, Vaughn and Wheeler, Paul J. Lewis, and Gay and Southard in America; Besredka and Steinhardt in Paris; and many others. Their results developed a knowledge of a previously unknown con-

dition in experimental animals called anaphylaxis.

The best articles from a practical standpoint, those which deal with hypersusceptibility at the bedside, are those written last year by Currie of Glasgow, and by Goodall of London, both published in the *Journal of Hygiene*, and a relation of personal inconvenience and illness after the repeated injection in himself by R. Thorne Thorne, in the *British Medical Journal* of January 18, 1908, and a similar report by Rupert Waterhouse in the *British Medical Journal* of April 18, 1908.

Any one who has had occasion to treat relapsing cases of diphtheria with antitoxic serum must have been impressed with the quick reaction met with after a second injection. It is not uncommon in a diphtheria hospital, where relapsing infections occasionally occur, to find within two, three, or four hours, or half a day after the injection given at the time of the relapse, a very marked urticarial skin eruption develop, and with it general edema. Sometimes the disturbance is accompanied by a sharp rise of temperature and nausea or vomiting. Indeed, so common is this reaction to a second dose of horse serum given after an interval of weeks or months that workers in contagious hospitals learn to dread the necessity for giving such injections. They are not regarded as dangerous as far as life is concerned, but the appearance of a child, previously of normal complexion, is so striking when this marked urticarial eruption appears that a physician or nurse unacquainted with the phenomena may be frightened. The family may be assured that the condition is but temporary, and at most will last but a few hours to a day or two.

We have seen but two conditions which have in any way resembled the picture seen after second treatment by horse serum. In one case a young man, after eating lobster salad and drinking milk with it at midnight, suffered before morning from a generalized urticaria covering the trunk and extremities; the eyes were swollen completely shut,

and his ears from the extensive edema were several times their normal size. The whole condition subsided within twenty-four hours, and he was at work in thirty-six hours. In the other case a less marked urticarial eruption followed the ingestion of a large mess of strawberries. In each instance the onset came within a few hours of ingestion, in each urticaria and itching was intense, in each the swelling and rash picture resembled "serum disease," but was more severe.

I remember seeing a light blonde girl, a patient in the Diphtheria Hospital, in whom a second injection of diphtheria antitoxin was given twenty-four days after treatment for diphtheria (in this instance an immunizing dose of 2500 units), develop local urticaria within fifteen minutes after the injection, have general edema and wide-spread urticaria within half an hour, a sharp rise of temperature (to 101°) with extensive edema in six hours, and the whole condition subside within forty-eight hours; and except for the appearance of the patient while the eruption was visible no serious symptom developed. Similar reactions, usually less marked than in the case recited, or more delayed reactions, are to be expected weeks, months, or even years after patients have had serum.

This condition in the human being is spoken of as hypersusceptibility, or hypersensitization by English writers, and as *Die Serumkrankheit* by Germans. One injection of horse serum seems to render the individual hypersensitive to a second injection given after a considerable interval, causing in many cases the usual serum rash or serum disease to appear immediately, or within a day or very few days after injection. Von Pirquet and Schick in their monograph on "*Die Serumkrankheit*" have spoken of this reaction coming on quickly after injection as the "immediate reaction," and where delay in its appearance occurs and the typical symptoms appear several days after injection, "accelerated reaction." They quote a number of cases from the Children's Hospital in Vienna illustrating each reaction.

Chart of Case 17, showing accelerated reaction in a patient under serum treatment a second time sixty days after having had serum treatment. *Note.*—The serum rash and fever came five days after injection instead of eight or ten days, as is commonly seen.

Currie, of Glasgow, tabulates a large series of cases having treatment at intervals, classifying them by Pirquet and Schick's method into cases showing "immediate reaction" and those showing "accelerated reaction;" and in the second paper illustrates these reactions with case histories. Goodall tabulates in a similar way his cases in London. The work of these men and others and the reports of individual cases are in agreement that repeated injections of horse serum into man, especially if these injections be at intervals of more

than ten days, sensitize the individual. All agree that in so far as clinical data and experimental work in human beings have gone, there is no good reason to believe that this sensitization will bring about very serious or fatal symptoms similar to those secured in the experimental work in animals; nor is there sufficient evidence at hand to justify withholding serum in cases of relapsing infection or reinfection.

At the suggestion of Dr. A. C. Abbott, Chief of the Philadelphia Bureau of Health, and by request of Dr. Griffith, I desire at this time to record some statistics of hypersensitization in patients under my care while chief resident physician in the Philadelphia Municipal Hospital, illustrating these various degrees of sensitization by tabulating cases immunized at intervals of varying length, or of patients treated for relapsing diphtheria infections, and to point out a danger in treatment by "spaced injection."

In the tabulated summary of thirty cases appended the clinical data following the first and second injections are classified in columns similar to the method adopted by Goodall. There is a striking similarity in our findings. In Goodall's ninety cases 18.8 per cent showed "immediate reaction" and 33.3 per cent showed "accelerated reaction." In my series of thirty cases eight showed immediate reaction, one (Case 12) showing it fifteen minutes after injection, and twelve showed accelerated reaction. Five of my cases showed both the immediate and accelerated reaction.

In column I are serial numbers referring to the individual cases.

In column II the numbers indicate the time the treatment was first given. The first number indicates one dose, the second the number of days before repeating treatment, etc. Example: in case one the patient was given 5000 units of antitoxin on admission, and it was repeated on the third day after admission. In a period of thirteen days a relapsing infection occurred, and in column IV this is indicated.

In column III is shown the day of the

appearance of the serum rash or illness attributed to serum.

Column IV shows the interval elapsing between the time of the first injection, and the giving of serum at a subsequent infection or for the purpose of reimmunization.

In column V is shown the time of "immediate reaction" or its absence.

Column VI shows the frequency of "accelerated reaction."

The first line in column VII shows the number of units and number of doses given in the primary treatment, and the second line indicates the amount of serum given at the second treatment after a long interval.

In column VIII is tabulated the age and sex of patients.

These cases were selected from recent records of patients under treatment and from personal experience of members of the staff, and do not begin to represent all the cases injected while handling a series of 5300 cases of diphtheria, each of which had serum treatment, and 4000 cases of scarlet fever, many of which had serum, and a considerable number of each group of cases which were reimmunized or returned with reinfections. To secure all of this data from so large a series of cases where this particular reaction is not separately indexed would have required more time than was at my command. A few cases, however, are enough to impress the lesson already pointed by von Pirquet and Schick, by Currie, and by Goodall, that certain phenomena follow second injections of serum after an interval of time which are not met with in primary treatment. It seems wise, therefore, in this stage of serum therapy, when every one has the utmost confidence in its curative power, to call attention to these reactions so that the practicing physician may anticipate them and give the family a favorable prognosis.

One should not confuse these reactions with the grave collapses occasionally reported after a first injection of serum. A few such cases have recently been reported in the *Journal of the American Medical Association*. These collapses seem to be an

I	II	III	IV	V	VI	VII	VIII
1	1, 3	.....	13	.....	Severe rash and edema 16th day.	5,000 7,500 5,000	F., 3 yrs.
2	1, 3	.....	15	.....	.....	2,500 2,500	F., 5 yrs.
3	1	.....	18	.....	.....	5,000 2,500	F., 6 yrs.
4	1, 2	Severe, masked by onset of scarlatina.	21	Positive, general rash in 2 hours.	Positive 23d day.	5,000 10,000 5,000 10,000 7,500	F., 4 yrs.
5	1, 2, 3	Positive 9th day.	23	.....	Positive rash 25th day, temp, 102.8°.	7,500 3,000 7,500 5,000	M., 2 yrs.
6	1	Positive, masked by measles.	26	Positive rash 4 hours after injection.	Positive 32d day.	5,000 10,000	F., 7 yrs.
7	1, 2	Primary rash.	31	.....	.....	7,500 2,000 7,500	F., 3 yrs.
8	1	.....	31	.....	.....	1,000 4,000	M., 27 yrs.
9	1, 2	.....	31	.....	.....	2,000 2,500	M., 8 mos.
10	1	Positive, slight.	39	Positive rash 6 hours.	Positive 42d day, fever 2½ days.	2,500 10,000 5,000	F., 1 yr.
11	1, 5, 5, 6, 6, 7, 8	Positive 16th day, fever irregular.	40	.....	Positive 46th day, vomited, fever.	5,000 ? 2,500 10,000 10,000 10,000 10,000 7,500 7,500	M., 4 yrs.
12	1, 2, 3	Positive, without rash.	45 immunized.	Positive, 15 minutes, severe, great edema, slight fever.	.....	10,000 2,500 10,000 10,000	F., 4 yrs.
13	1, 2, 3	.....	42, 84, 126, 374, 425	.....	.....	10,000 2,500 10,000 2,500 10,000 2,500 2,500	F., 2 yrs.
14	1	Positive, 10th day slight rash.	43	.....	.....	2,500 2,500	F., 8 yrs.
15	1	Masked vaccinia.	50	.....	.....	2,500 10,000 10,000	F., 13 mos.
16	1	.....	60	Positive 62d day, fever.	.....	5,000 2,500	F., 8 yrs.
17	1	.....	64	.....	Positive 69th day, no rash.	5,000 5,000 5,000	F., 3 yrs.
18	1, 1, 2	.....	69, 181	.....	.....	10,000 2,500 10,000 2,500 10,000	
19	1, 2	.....	75	.....	.....	10,000 2,500	
*20	1	Not known.	4 years, 72, 164, 179, 193, 211	Positive. Positive. Positive. Positive. Positive.	Positive. Positive. Positive. Positive. Positive.	? 2,500 2,000 1,500 1,500 2,500	M., 9 yrs.
21	1, 2, 3	Masked measles.	89	Positive 6 hours.	.....	10,000 1,500 10,000 10,000	F., 3 yrs.
22	1, 2	Positive rash, joint pains, 811.	154	.....	.....	5,000 1,000 refined serum.	F., 20 yrs.
23	1, 2	Positive.	201	.....	.....	5,000 5,000 5,000 6,000	M., 5 yrs.
24	1, 2, 3, 3, 4, 6	.....	220	.....	.....	10,000 1,000 10,000 refined serum. 10,000 10,000 5,000 5,000 5,000	F., 22 yrs.
25	1, 2	Positive, severe, 8 days.	322	Positive 10 hours.	Positive 326th day, 4-day rash.	10,000 10,000 10,000 10,000	M., 2 yrs.
26	1, 2	.....	360	.....	.....	5,000 5,000 5,000	M., 10 yrs.
27	1	Local rash 8th day.	22, 24	.....	Positive, slight, local 28th and 50th day.	2,500 2,500 2,500	M., 25 yrs.
28	1	.....	75 mo.	.....	Positive, general rash, edema, swelling of lips.	1,000 2,500	M., 35 yrs.
29	1	Local normal.	90	.....	Positive, general edema of arm, fever.	2,500 2,500	M., 26 yrs.
30	1, 4	Fever.	13	.....	Positive 16th day, hemorrhagic rash.	5,000 7,500 5,000	F., 3 5/12 yrs.

* Case 20 showed immediate reaction from half an hour to two hours, and some accelerated reaction from twenty-four to thirty-six hours in each of five injections for immunizing purposes. With each injection the reactions were less marked.

entirely different condition of unknown origin occurring very rarely after a first injection of serum, and are probably analogous to similar collapses following hypodermic medication. In an experience of more than seven thousand five hundred first injections I have not met with such collapse.

There is no doubt in my mind, however, but that certain other factors very largely determine the severity of this reaction. It has been my experience that the serum from some horses is much more apt to cause severe urticarias, febrile disturbances, or joint pains than is serum from other horses; and we have also noted in reimmunization or in treating relapsing infections that certain sera cause more disturbances than others, and green sera seem more apt to cause urticarias than do old serums.

These facts have been so frequently observed in the Municipal Hospital that the horse number and bottling date is always charted in recording doses of antitoxin in order to establish which horse gives the best serum. The older nurses quickly learn to note which consignment of serum causes severe urticaria and which lot produces none. It is not at all uncommon when one of these nurses sickens with diphtheria to have one of them produce serum which they have observed causes no rashes and request it be used in treating her. The serum had been hidden away for purely selfish reasons.

The laboratory division of the Philadelphia Board of Health four years ago began to send each lot of serum from a new horse to the hospital for testing before giving it out for free distribution. If too many annoying rashes were produced by it in the hospital the horse was not used any further, even though he may have been giving a very high-grade serum. It will be seen at once that this is a decided practical advantage in public health work not enjoyed by the manufacturer, and yet it seems that they should have a method by which the severity of these rashes might quickly be reported to them before large quantities of serum from any particular horse are widely distributed throughout the country.

These precautions perhaps give us fewer severe reactions than others note.

During the summer of 1907 we tested in the Municipal Hospital the new refined antitoxin, concentrated by Gibson's method, giving it to 100 cases ill with diphtheria and carrying along a parallel series of 100 cases treated with whole horse serum, noting in each series the number of cases having symptoms attributable to serum. Our observations agree with Park that these primary disturbances are greatly reduced in number and in severity by concentrating the serum by Gibson's method. We had the privilege at that time of treating several patients for relapsing infection and of reimmunizing several patients at intervals with this serum. In no instance did we find either "accelerated" or "immediate reaction" follow its second administration.

Further evidence on this point is needed. Rosenau's experimental work would seem to show that in guinea-pigs the toxic action of refined serum does not differ greatly from other serum. Our few observations would suggest that interval injections are not followed by symptoms of hypersusceptibility when this serum is used.

By spaced injections we mean injections with an interval between doses of serum shorter than is noted in relapses and longer than is usually practiced in treatment. The following history illustrates what we mean by spaced injection:

Case 30.—E. H., 3 $\frac{5}{12}$ years of age, admitted the fifth day ill with nasal and faucial diphtheria; 5000 units of antitoxin were given at once. Three days later, the clinical evidence of diphtheria still being present, an additional dose of 5000 units was given. On the eleventh day of illness the pseudomembrane in the throat seemed to be coming away and the fever subsided, but the nasal condition (serous discharge with flocculi and posterior blocking of nares) persisted. On the eighteenth day of illness, just thirteen days after the first serum had been given and ten days after the second injection, pseudomembrane began reforming rapidly on the tonsils, and a third

injection of 7500 units of antitoxin was given.

Following the second injection the temperature remained rather high, but no rash appeared. Two days after the third injection severe circinate erythema associated with urticaria developed, and was accom-

panied by a high fever. This eruption rapidly became hemorrhagic and lasted about two and one-half days; irregular fever lasted six days. The accompanying chart illustrates the reaction and shows graphically the disturbances following spaced injections.

Chart of Case 30, showing a wrong method of giving antitoxin. A three-day interval is noted between first and second doses, and a ten-day interval between the second and third doses. *Note.*—The three-day interval "spaced injection" probably accounts for continuous fever before the primary decline, and the later injection accounts for the hemorrhagic eruption two days after injection and for the irregular fever. Daily or more frequent doses until pseudomembrane had disorganized would probably have effected a cure with normal temperature in less than a week.

CONCLUSIONS.

There seems to be but little doubt in the minds of all who have worked in serum therapy that second injections of serum, after a considerable interval of time, cause immediate disturbance several days earlier than that met with as a normal reaction.

The immediate reaction is seen in from eighteen to twenty-seven per cent of cases receiving second injections. The accelerated reaction is probably seen in from thirty to forty per cent of such cases.

These reactions are annoying, but in no case yet reported have they resulted in death.

Spaced injections are errors in treatment and should be avoided because of the unnecessary sickening.

The experience and observations of

others, combined with my own personal experience and observations along purely clinical lines, lead me to believe that daily injections of serum for a period of several days in no way increase the disturbances which are commonly expected about the eighth or tenth day after treatment; that with a two-day interval in serum dosage rashes and febrile disturbances are more annoying; that if the interval be three days greater disturbances occur; and with four days or longer as an interval graver disturbances may be anticipated.

The lesson to be learned about spaced injections is that it is wise to keep giving injections at close intervals, until the clinical evidence of the disease is well under control, rather than use injections at intervals of several days.

35 S. 19TH STREET.

PATHOLOGY IN ITS PRACTICAL BEARINGS UPON THE TREATMENT OF CERTAIN DISEASES OF THE SKIN.¹

BY L. DUNCAN BULKLEY, A.M., M.D.,

Physician to the New York Skin and Cancer Hospital; Consulting Physician to the New York Hospital, etc.

Pathology has always been an interesting study, because by means of it we seem to come near to the true seat and nature of disease. But the physician must ever bear in mind that while the scientific aspects of medicine and surgery may be ever so attractive and alluring, his true province is to relieve suffering or annoyance, and to prolong life, by checking or curing the disease presented to him; in a word, pathology is not to be followed and studied for itself, but only as a means of accomplishing something of value in the line of the healing art.

With this thought in view I have chosen for our topic "pathology in its practical bearings upon the treatment of certain diseases of the skin," and hope to show that the application of some pathological knowledge is of the greatest importance in successfully dealing with many cutaneous affections.

Some years ago the histopathology of the skin, as affected by disease, was the object

of much investigation, and it may almost be said that active observers have about exhausted that special field of study. Some think that these researches have been of relatively little practical value in understanding and curing diseases of the skin, but we shall see that if properly understood and appropriated many of them may be of signal service in connection with dermatological therapeutics.

But true pathology, as indicated by the derivation of the word (*πάθος*, disease, and *λογος*, understanding), the knowledge or understanding of disease, is a much more important and valuable study than simply the pathological anatomy of the affected tissues; and it really includes etiology and everything bearing on disease. It is in this broader view of pathology that we shall find some of the most important suggestions to guide us in treatment, although the application of a knowledge of histopathology is also of great value, as has been remarked.

Internal pathology includes the study of metabolism and an appreciation of its chang-

¹Read before the Rochester Pathological Society, Jan. 30, 1908.

ing conditions, as often very clearly shown by repeated, complete quantitative analyses of the urine; for catabolism and anabolism are known to have very constant and important relations to many cutaneous changes. In our consideration of pathology in its practical bearings upon the treatment of certain diseases of the skin, we shall necessarily consider the subject in its broadest sense, and find in this latter line of investigation a very great deal of the highest importance in connection with the cure of many cutaneous affections.

Let us begin with the commonest of all skin affections, namely *acne*, which few adults have escaped, to a greater or less degree at some period of life, and we will find certain pathological suggestions of great value.

All investigators agree that the eruption pertains to the sebaceous glands, which for reasons only partially known are particularly liable to be disturbed in their action on the face. From an imperfect action of the lining cells of these glands, their secretion, which should exude in an oily form and keep the skin in a normal condition, is not properly elaborated, but the secreting cells are thrown off in an imperfectly transformed state, and collect in their ducts and cavities. A solid mass is thus formed, which cannot find exit, and consequently remains in the gland, distending it to a greater or less degree, until the well-known comedo, or blackhead, is formed: this comes out only by forcible pressure, in the form of a pear-shaped plug, the end being blackened, partly by dust and partly by chemical alteration from exposure.

These hardened plugs act as mechanical irritants to the skin, and set up a suppurative process, causing the acne pustule, when the system is in a condition to furnish suitable pabulum to the microorganisms ever present. In many of the deeper lesions the blocked follicle is not recognized until the occurrence of the inflammatory lesions, but the pathology is the same. Also in the muddy skin, with innumerable, often very small, choked follicles, there is a similar failure in the lining cells of the sebaceous

glands to undergo proper transformation into oily matter; while in oily seborrhea their action may be excessive.

Recognizing then the pathology of this class of affections, what is the proper treatment to correct the difficulty? A moment's thought will show how futile it is to expect great, if indeed any, satisfactory or permanent results from local treatment alone. While many of these occluded glands may be emptied of their contents mechanically, and then, by exactly the right stimulant, or even antiseptic applications, the glands may be made to temporarily enter upon an action nearer the normal, the results obtained are only local and transient. Such treatment can never reach the true cause of the difficulty, namely, the atony of the structures of the skin, including both the cells lining the sebaceous glands and the minute muscles more or less surrounding them, which latter are intended to facilitate the expulsion of their contents.

The same atony which is manifested in these elements is also constantly found in the heart and capillary circulation, and cold, clammy hands and feet are almost constantly observed in connection with acne.

Intelligent therapeutics, therefore, would be naturally directed against the pathological cause of the trouble, and experience shows us that internal tonics, including iron, together with such vascular adjuvants as digitalis and strychnine, will in the end accomplish most good. Clinical observation shows that errors of diet and hygiene, leading to gastrointestinal indigestion and constipation, and consequent nutritive disturbances, are fertile causes of this lack of tone in the system, and of course are to be corrected most rigidly by every power of the physician, if one would secure satisfactory results in the treatment of acne.

But the pathology of this affection also points the way to the proper local treatment. In many cases, while the sebaceous glands are filled and blocked with hardened masses which cannot find spontaneous exit, the skin cannot regain a normal condition; hence a certain amount of manipulative interference is necessary, in the way of ex-

pressing the comedo plugs and occasionally opening the inflammatory lesions, to allow those imprisoned to escape: in some cases it is desirable to remove these and stimulate the surface by the rather rough use of the dermal curette, but this is seldom necessary. A certain amount of self-massage also is of value in restoring tone to the skin, and my constant direction is to rub the face well with the palms while washing in cold water.

The pathological congestion observed in the face in most cases of acne naturally calls for sedative and astringent local applications, and the value of a calamine and zinc lotion, or the *lotio alba*, is well known.

The x-rays have been advocated in acne, but although employing them daily for various conditions I never could see the reason or propriety of their use in acne, and have treated many cases in which they had been previously employed without advantage, or even with harm. Although from their well-known effect upon the blood-vessels they may, in certain cases, cause the disappearance of some sluggish lesions, my knowledge of the pathology of the disease teaches me that the treatment is irrational, and considering the risk run, that it is unwise to attempt their removal by this means, when a proper, all-round treatment will accomplish the end so satisfactorily.

The next most frequent eruption in connection with which a proper conception of pathology is most important, in relation to treatment, is that protean disease to which the designation of *eczema* is given. It is always well to bear in mind the origin of the name, given long ago by the fathers of medicine, who were good observers: it is from the Greek *ἐκζεῖν*, to boil over. The first true pathological point to remember is that the eruption (from the Latin *erumpere*, to burst forth) is not a purely local affair of the skin, but is of internal origin, although it is difficult to state briefly all the internal causes of the disease. No careful observer, however, who has had very much to do with eczema, and has observed patients so afflicted, over a number of years, can possibly doubt the truth of this assertion.

Time does not permit us to dwell at great length on matters relating to any one disease, and a whole evening or more could be profitably spent on this affection. I can only warn you against regarding the eruption of eczema too lightly, and urge you to study each case carefully and systematically, on paper, in order to determine the internal and general causative elements which may bear on the eruption; for from long experience I am confident that only thus can good success be obtained, and with it the disease is surely curable—I mean, when its chemicopathology is constantly studied and rightly acted upon.

A knowledge of the local pathology of eczema is also valuable to bear in mind in connection with topical applications to the diseased surface. Many an eruption of eczema is irritated, aggravated, and prolonged by injudicious methods of local treatment, while just the right application will often be said by the patient to "work like a charm;" but there is no charm about it, only the exactly proper measure which the existing state of the skin calls for, and this is, indeed, sometimes pretty difficult to determine. Time does not permit of entering into details regarding local treatment, but I will remind you of the pathological basis upon which correct local measures are to be employed.

Remember the immense vascular and nervous supply of the skin, and how intensely sensitive the cutaneous surface is when it has been bereft of its epidermal covering, as after a bruise or a blister. Remember also that nature has great powers of recuperation, as is instanced in repairs after surgical injuries, and that the skin, unless there are internal or external agencies preventing, tends to recover its normal state; thus, in health, after mechanical injuries a scab or crust is formed, beneath which the epidermis is regenerated. These simple and well-known pathological facts should guide us somewhat in our treatment of the eruption, and yet as I see practice they are constantly ignored, and eczematous surfaces are often shamefully irritated by methods of treatment quite unsuitable to the condition present.

The first principle is that of soothing and protecting an irritated and inflamed surface, and the reason of the wide acceptance of oxide of zinc ointment, popularized by the late Sir Erasmus Wilson, of London, is found in its bland character. There are, of course, very many matters of detail in connection with local treatment and the mode of making and removing dressings, which cannot be entered upon now, but I only wish to impress upon you the necessity of dealing gently with inflamed eczematous skin.

On the other hand, there are certain chronic eczematous states which demand quite other treatment, and a recognition of the pathological condition present is equally important. In these the acute congestion and inflammation has passed, and has given place to an infiltration of the tissues with an exudate, mainly of cellular elements, which produces an induration that will not yield to such simple remedies. Proper stimulating and absorbing measures are then required, but with the use of these it is still well to bear in mind the antecedent pathological process, which may be excited anew by unwise stimulation.

In eczema of the lower extremities, which is often so rebellious to treatment, the pathological relations of the venous circulation are all important, and continuous and high elevation of the limb, or perfect support by the solid rubber bandage, will often contribute to removing an eruption which was otherwise incurable; sometimes a surgical operation on the dilated veins will effectually put an end to the trouble. Many more points could be cited in regard to eczema, where a proper consideration of pathology would help greatly in removing the difficulty, but these are enough to call your attention to the importance of seriously studying each patient with eczema, both to determine the cause and to recognize the actual pathological condition of the skin to be treated.

The histopathology of *psoriasis* is well known, but does not help us very much in regard to treatment. Clinical experience, however, demonstrates that its etiological

pathology is based on some change in the system, as is evidenced by the well-known tendency of the eruption to appear or increase at certain seasons of the year, when there is a natural change in diet, and when climatic changes affect the organism. Closer observation, both clinically and by very complete urinary analysis, shows these disturbances to be intimately connected with faulty nitrogenous metabolism, and led by this knowledge we continually find the greatest benefit, and even the cure of psoriasis, from the avoidance of animal food and the maintenance of an absolutely vegetarian diet. We find also the greatest benefit from such internal medication as facilitates the fullest oxidation of metabolized elements, which explains the wonderful effect of nitric acid, in full doses, in certain cases.

Contrary to what the histopathology of psoriasis might teach us, the eruption can generally stand a great amount of stimulating treatment; and it is an interesting observation that almost all the remedies commonly applied with advantage are parasitocidal: thus, for instance, chrysarobin, which is the nearest to a local specific, was first employed for the cure of ringworm. But investigators have continually sought in vain for any definite microbe in psoriasis, and the eruption is not contagious. From the character of the eruption, its mode of development, etc., my belief, however, is that the individual lesions are caused by a microorganism, probably one of those common upon the skin, which takes on unwonted action under certain altered conditions of the general system.

Urticaria is an eruption where the local pathology of the lesions teaches us little in regard to treatment, but its true pathology, as an angioneurosis, is very necessary to comprehend and act upon. Exactly how the vasomotor disturbance of the capillaries occurs has not been determined, but clinical experience shows that autointoxication from the gastrointestinal tract is the most prolific cause; and this toxic process may go on long after any acute cause has passed off. From the changes in the capillary circulation

caused by many nervous states, as observed in blushing, and also in blanching from fear, and the flushes and perspirations in connection with the menopause, we learn that nervous and other causes may disturb the equilibrium of the vasomotor system which is at fault in urticaria.

Herpes zoster affords a striking illustration of the importance of pathological knowledge in connection with a disease on the cutaneous surface. Until the discovery of its true pathology all sorts of ideas prevailed, and the eruption was ordinarily regarded, together with many other skin disorders, as arising from some blood disorder or disturbance of the system. We now know that the lesions on the skin are only the outward expression of a neuritis, and that generally the posterior spinal ganglion is found inflamed. The exact cause of the neuritis has not been determined, but enough is known to show the futility and needlessness of much of the treatment which might otherwise be given. The baselessness of the popular fear that the disease will prove fatal if the eruption extends so as to completely encircle the body is also shown by the pathological fact that this cannot occur, as the affected nerve supplies only one half of the body, and the eruption cannot extend beyond the limits of its distribution. Cases, however, are on record in which there has been a simultaneous affection of two spinal nerves, on opposite sides of the body, and even opposite one to the other, and the eruption, which has formed a complete girdle, has not proved fatal.

Our knowledge of its pathology has guided the treatment to measures which control or relieve the neuritis and its pain, and to the proper local protection of the affected cutaneous surface, until the self-limited eruption has fully run its course. Clinical experience has taught us to avoid anything which will irritate the surface, or break the covering of the vesicles and blebs until the surface has completely healed beneath them.

Local pathology has also constantly been of very great assistance in directing our

treatment of a considerable number of affections occurring on the skin, and perhaps one of the most striking of these is *impetigo contagiosa*.

Since the demonstration of the production of pus by staphylococci and streptococci the therapeutics of impetigo has been greatly simplified, and the proper application of diluted white precipitate ointment rarely fails to check the local lesions promptly. Of course the general and constitutional measures necessary to render the subject unsuitable to the development of the pus-producing organisms remain the same.

The *vegetable parasitic diseases* of the skin also illustrate the great value of pathological research and demonstration. It is not many years since even Sir Erasmus Wilson, of London, once a prominent figure in dermatology, insisted that what we now know to be certain lower forms of vegetable life were only modified epithelial structures; and while the contagiousness of this class of affections was recognized clinically, the true cause, leading to proper treatment and adequate prophylactic precautions, was only developed by pathological research.

A knowledge of the histological findings in *ringworm* and *favus* of the hairy parts is of great assistance in the practical treatment of these affections, for it shows us that the parasite penetrates deeply along the sheaths of the hairs, below the constriction of the hair follicle at its upper third, and it demonstrates how impossible it is for applications containing solid particles to penetrate to the depth requisite to kill the invading fungus; it explains also why such remedies as iodine and the oleate of mercury can better reach the seat of the difficulty in old cases.

The microscope also aids us greatly in regard to the prognosis, and in determining as to the cure of these cases. In many instances the disease will seem to be overcome, and yet if diligent search reveals a single hair still infected the case is certainly not cured, but if neglected any amount of new disease may develop, insidiously, and the patient may infect others.

A knowledge of the simple pathology of *scabies* has also revolutionized our methods of treatment, and it sounds strange enough now to be told that not much more than fifty years ago the eruption was seriously considered as a "blood disease;" and I have in my library an old German book with the title "On the dangers of driving in the itch"—probably there might be danger if the itch insect could gain access to certain portions of the economy, but this aspect of the question was not the one considered. Knowing the purely local character of the trouble, and the necessity of reaching and destroying every individual parasite, we now cure the patient with scabies in as many days as formerly it took weeks or months to accomplish.

Syphilis is a disease in regard to which there has been a very great amount of pathological research, but unfortunately this has not contributed as much to our practical control of the malady as might be hoped or expected, although along certain lines it has been of the greatest service. The various attempts to discover the actual organism causing syphilis have not thus far added to our knowledge of treatment; and it is quite possible that the recently much discussed spirochæta may in the end be found to play no actual causative part in the disease.

But pathology has added very largely to our power of controlling many of its graver manifestations by proper treatment. This is a very great subject, and it would take far too much time even to enumerate the particular points which might illustrate this fact, many of which are known to you all; thus, for instance, syphilitic disease of the arteries, of the eye, brain, spinal cord, etc., all demonstrated by pathological research, is now far better understood and treated than formerly.

Much good pathological work has been done in connection with the various forms of *cancer*, and has undoubtedly contributed very greatly to the successful management of certain phases of this many-sided difficulty. Here, however, as in so many other directions, it has as yet failed to give us any

real clue to its etiology, or any hint in regard to preventing or guarding against the cell misbehavior. But it has aided much in our understanding as to how the disease extends, and has taught us the necessity of very radical measures in certain cases, which often yield a success not secured before. At present we are concerned only with dermatological carcinoma, and not with the deeper forms belonging more to the domain of surgery.

Epithelial cancer, or epithelioma, owes much to pathology. In former times small ulcerations or sores of uncertain character on the skin and mucous membranes were "touched up" with nitrate of silver, and as they refused to heal they were then subjected to superficial cauterization of various kinds, until often through such mismanagement ulcerations of most serious and formidable character were produced, even ending fatally; this is peculiarly true in regard to cancer of the lip. Well was the name *noli me tangere* ("touch me not") applied to some of these conditions, which only grew worse under such treatment as was given.

Thanks to pathology, joined to clinical experience, we now know that these epithelial degenerations must be treated either very radically or very gently; some of them when beginning will yield to the persistent, judicious use of very mild, non-irritating, protective applications, but in the main they require a firm hand, which may have to use the most radical means.

It would take far too long to develop this subject fully, but I want to indicate a few points where pathological study has favorably influenced our treatment of epithelial cancer. In earliest days, after surgical excision epithelioma was very apt to return in the scar. We now know by the microscope that the disease often extends very much further than is apparent on the surface, and now, when excision is practiced, the removal is much more extensive, and the operation proportionately more effectual. Pathology has also taught us very much in regard to the extension of the disease along lymphatic spaces, and the radi-

cal removal of all possible lines of infection has greatly increased the favorable results of surgical operation. Some of the severe caustic pastes, notably that of arsenious acid, or Marsden's paste, seem to possess certain selective powers, and to extend their action beyond the apparent area of disease, so that after their proper use there are also permanently favorable results.

In later days the *x*-ray has successfully entered the field as a curative agent, almost wholly on clinical grounds, although pathology has attempted to explain its beneficial action, partly through changes which take place in the capillaries, and partly through a condition of fibrosis inducing an absorption of the epitheliomatous cells. But the *x*-ray is a more or less uncertain agent, according to the mode of its use and the person administering the same, even as is the knife or the violin bow in the hands of a tyro or of a skilful person. When used in exactly the right manner the results from the *x*-ray, in a great number of cases, are simply marvelous; when injudiciously employed the effect may be disastrous, as all know. After long, daily experience with it, in thousands of applications, I am continually impressed with its supreme value in many cases which previously were most unsatisfactory under treatment; on the other hand, from occasional bad and even most distressing results which I have observed from its careless employment by others, I am more and more convinced that it is an agent which should be resorted to only with the greatest caution, and should not be employed indiscriminately by inexperienced persons, as is too often the case.

There are many other illustrations of the practical bearings of pathology upon the treatment of diseases of the skin which could be cited did time permit, but these are sufficient to indicate the importance of the subject.

Diseases of the skin are often regarded too lightly by the physician and the patient put off with some favorite prescription, or perhaps with the newest suggestion in a medical journal or from an enterprising drug firm, if not with a worse quack or

semiquack advertised remedy, without any serious attempt to study the case and to locate and remedy the real cause of the difficulty. I say this advisedly, for the fact appears daily in investigating cases which have previously been under treatment. As an illustration of the other and right method of regarding cutaneous manifestations, I may refer to the remarkable and complete series of articles by Dr. Osler some time ago concerning the internal relations of certain erythematous eruptions. In them he traced very clearly gastric and intestinal crises and kidney complications, many of them even ending fatally.

The limits of this paper have not permitted us to enter much into the subject of physiopathology, but I am convinced that the advances of the future will be found along lines of study relating to metabolism and the errors of nutrition and elimination. The researches which have been already made in regard to internal secretions have widened our horizon greatly, and have broadened our views concerning medicine in general. And the more we study many cutaneous affections very closely, the more we will find that they have internal relations which are of the greatest importance, not only as regards the cure of the particular disease under consideration and the avoidance of its recurrence, but also in reference to the health and even life of the individual affected. It is well to always bear in mind what I have recently called particular attention to as "Danger-signals from the Skin."¹

Pathology has rendered great service to general medicine and to humanity by its studies on microorganisms, those of which are found on the skin being primarily and always largely investigated; and it must be remembered that the great advances which have led up to the triumphs of aseptic surgery are of this origin. Allusion has already been made to some of the benefits to dermatology from bacteriological research, especially in regard to the pus cocci, and it is expected that continued

¹*New York State Journal of Medicine*, June, 1907.

investigations will demonstrate more and more clearly the part which many of these mysterious bodies have in the causation of various manifestations on the skin, and so help materially in their treatment.

Seborrheic eczema, or dermatitis seborrheica, is now recognized as parasitic, and successfully treated accordingly.

It is too early to form any decided opinion in regard to the real value of the *opsonic index* and treatment as applied to certain skin affections; but as evidence accumulates it would seem that there is real value in the method, and it is hoped that experience will crystallize the proceeding in such a manner as to make it practical to the profession at large.

In conclusion I wish to thank your president and the society for the honor of an invitation to address you, and to apologize for the shortcomings in this address, which must be apparent to all. The pressure of work has prevented me from making such research into literature as might have made these remarks more interesting and instructive, and I have only given out thoughts which have come to hand from my general knowledge of the subject. My line of work has always run more to the clinical than to the pathological side of medicine, but the two are twin handmaids, whose work should never be disassociated in the practice of medicine.

531 MADISON AVENUE, NEW YORK.

NEPHROURETERECTOMY FOR TUBERCULOSIS.¹

BY JOHN B. SHOBER, A.M., M.D., PHILADELPHIA.

It is not my purpose to enter into a general discussion of tuberculosis of the kidney, but rather to use as a text a case which has been under my care, drawing such conclusions as seem warranted and calling attention to the various points of interest as they arise.

Mrs. K. R. was referred to me in August, 1906, by Dr. R. G. Higgins and Dr. F. Fremont-Smith, of Bar Harbor, Me. She was thirty-three years old, had been married thirteen years, had no children, but had two miscarriages during the first two years of married life. Menstruation began in her seventeenth year and has always been regular, but profuse and accompanied by clots and severe pain on the first and second day. She was six feet tall and very slender, and weighed only 109 pounds. There was a family history of pulmonary tuberculosis, her mother and a half-sister dying of this disease at the ages of forty-seven and thirty-nine respectively. One half-brother died at forty-five of cancer of the rectum. She always enjoyed good health until five years before, and weighed about 139 pounds. At that time, in the

spring of 1901, she had a fall of seven feet from the end of a porch and struck the ground face downward. Apparently she was unhurt, and went in bathing the next day. Four days later her legs became swollen, but the swelling subsided in three days. Two weeks after the fall a small lump appeared in the right inguinal region. It was not tender or painful at first and was diagnosed as a hernia. Unsuccessful efforts were made to reduce it, and a truss was ordered, which she wore for three months, suffering severe pain and losing health and weight. Another attempt was made to reduce the "hernia" under ether. She then rebelled and went to Bangor, where the abscess was opened and a large quantity of pus drained off. A freely discharging sinus has persisted ever since, closing occasionally near the surface and causing symptoms which required reopening and irrigation. When the sinus was closed she had a full, throbbing pain in the right iliac fossa, night sweats in lower limbs, with slight chills and fever, but no cough at any time. Menstruation became more and more painful, always requiring morphine. Urinary symptoms had begun two years before I saw her, with increased frequency and

¹Read before the Obstetrical Society of Philadelphia, Feb. 6, 1908.

sediment composed of pus, epithelium, and, during the previous six months, microscopic blood. She complained of occasional attacks of severe colicky pain in right loin, and a constant sense of uneasiness in the region of the right kidney. The urinary symptoms were increasing, and although she was not always confined to bed, her health was failing rapidly.

The above symptoms and history suggested the following explanations: The original abscess may or may not have been a psoas abscess. The persisting sinus might be accounted for by a tuberculous focus connected with one of the lumbar vertebræ or with some abdominal organ. I might here say that frequent examinations for tubercle bacilli of the discharge from the sinus and of the urine had thus far always given negative results. The urinary symptoms suggested some form of nephritis, ureteritis, or cystitis, and the attacks of right lumbar pain aroused the suspicion of nephritic or ureteral calculus or tubercular kidney; and since the patient complained of severe and increasing dysmenorrhea, a pelvic lesion or complication might account for the whole trouble. Of course the thought of the presence of tuberculosis in some form was always foremost.

I will now outline the methods employed to establish the diagnosis of tuberculosis of the kidney.

The sinus had a small opening just inside the lower third of Poupart's ligament. A fine silver probe entered six inches, taking a course directly backward for three inches and then upward and inward toward the body of one of the lumbar vertebræ. Its course was stopped abruptly as by a hard body, but it did not give the sensation of contact with necrosed bone. Examination of the spine was negative.

A roentgenogram was made, but it gave no evidence of enlarged kidney or of stone in the kidney, the ureter, or the bladder.

The patient was admitted to the Bar Harbor Hospital in August, 1906. Upon pelvic examination was found a retroverted small but very hard uterus with fulness and tenderness on both sides, but no masses or evi-

dence of serious trouble with the appendages. Careful abdominal examination failed to reveal any tumefaction.

On several occasions the urine for twenty-four hours was collected and sent to Dr. Nathaniel Gildersleeve, to whom I am indebted for these and other analyses. The amount varied between 38 and 45 ounces. It was always acid, turbid, containing large quantities of pus, also epithelium, microscopic blood, and a few casts and a trace of albumin.

At first careful search by the usual methods failed to discover tubercle bacilli; but finally they were found by a method which rarely fails, and which should be better known and more frequently employed in these cases. Briefly stated the method is as follows: The whole quantity of the 24-hour urine or the quantity drawn by urethral or ureteral catheterization is centrifugated. Add to the sediment 10 to 15 cubic centimeters of a one-per-cent sodium carbonate solution; to this add $\frac{1}{2}$ gramme pancreatin. Digest for four to six hours at 37° C. Centrifugalize and stain with carbo-fuchsin. Decolorize with 30-per-cent nitric acid and counter-stain with methylene blue.

Pancreatin digests the proteid substances in the pus or sputum, causing them to go into solution, and by centrifugalization the tubercle bacilli can be precipitated and more readily demonstrated in the sediment. Pancreatin has no effect upon the bacilli, which are protected by the acid-fast substance surrounding them.

In the meantime the bladder was cystoscoped, both ureters catheterized, and samples of urine drawn from each kidney. The mucous membrane of the bladder was generally healthy. In the area of the right ureter and toward the trigone there was hyperemia and swelling which obscured the orifice. This ureteral orifice appeared to be on a higher level than the left, which was normal in appearance and position. There appeared to be no obstruction in either ureter. During two hours the right kidney secreted 1½ ounces and the left kidney over 3 ounces of urine.

	Right.	Left.
Albumin.....	+0.1	Trace.
Sugar.....	None.	None.
Pus.....	Abundant.	None.
Blood.....	Present.	None.
Casts.....	Granular.	A few hyaline.
Tubercle bacilli..	Present.	None.

The above studies demonstrated that the patient had a tubercular right kidney of at least two years' standing, and that the left kidney was sound. The cause of the persistent sinus could not be determined, but it was suspected to be the result of a psoas abscess of tubercular origin. The pelvic lesions were sufficient to account for the dysmenorrhea, and the possibility of tuberculosis of the Fallopian tubes was to be considered.

Nephroureterectomy was advised, but declined. A course of tonic, hygienic, and open-air treatment was instituted, and she was placed upon urotropin. She improved in health and gained weight during the winter of 1906-7, but toward spring the sinus closed again and had to be opened. She then began to fail rapidly. Attacks of lumbar pain became more frequent and the urinary symptoms increased, the urine often becoming dark and tinged with blood. Much of her time was spent in bed, but she improved during the early summer, and by the advice of Dr. Hunt, of Bangor, she consulted me in August, 1907.

A prolapsed, large, hard kidney of irregular outline could be palpated. Vaginal examination discovered a thickened ureter. The retroverted uterus seemed fixed and bound down with adherent appendages. The sinus was the same as on examination last year. A roentgenogram showed the shadow of an enlarged prolapsed right kidney and a thickened ureter extending well into the pelvis.

The combined urine showed increase in pus, blood, and detritus, and tubercle bacilli. The bladder did not show any marked evidence of tubercular disease except in the area of the right ureter. Here there was a deeply injected, elevated swelling obscuring the orifice of the ureter. The catheter would pass only two inches, and drained only a few drops of thick, bloody mucus.

The orifice of this ureter lay considerably above the level of the right, which was normal in position and appearance.

The urine from the left kidney contained no tubercle bacilli, only a trace of albumin, and an occasional hyaline or slightly granular cast. Inoculation of guinea-pigs with this urine failed to transmit the disease, whereas the combined urine promptly gave positive results. There was a daily afternoon rise of temperature, preceded by a slight chill. She weighed only 117 pounds; the complexion was sallow and pale; she suffered frequently from night sweats—in fact, every indication of a mild toxemia was present.

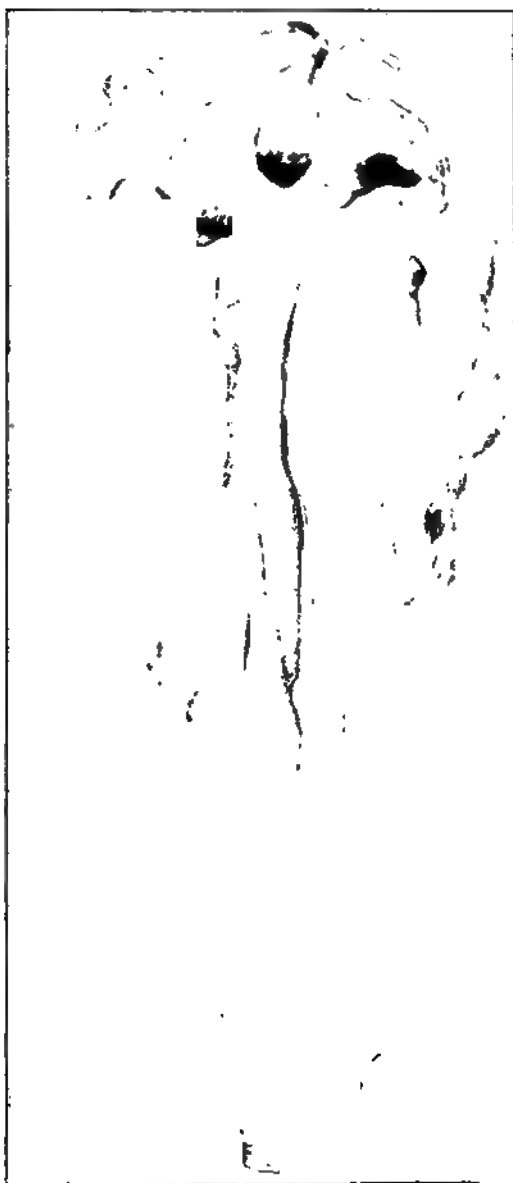
Here then, in the presence of a comparatively sound left kidney, we had a rapidly advancing tuberculosis of the right kidney of severe type, with abscess formation and almost complete destruction of kidney tissue, as the sound kidney was evidently doing all the work. The 24-hour urine averaged 41 ounces. Prompt nephroureterectomy was advised, and as the season at Bar Harbor was late the patient accompanied me to Philadelphia, where she was admitted to the Gynceean Hospital and operated upon on October 12, 1907.

The right kidney and entire ureter was removed by the method and through the anterior incision advocated by Dr. Edward Reynolds, of Boston (*American Medicine*, vol. ix, No. 8, pp. 313-317, Feb. 25, 1905).

I am indebted to Dr. Henry B. Ingle for the following pathological and bacteriological report and for the illustration:

"Specimen consists of the right kidney and entire right ureter. The kidney weighs 10.5 ounces, measures 10.5 x 7 x 5 centimeters, and from the upper border of the kidney to the end of the ureter measures 22 centimeters. The ureter is 2 centimeters in diameter. The kidney is intensely congested on its surface and scarred by adhesions, and contains many abscesses, one of which at its upper border has been incised and exudes a thick, stringy, yellow pus. The various abscesses are fluctuating to touch and yellowish in color. The ureter

is hard and densely infiltrated. On section in the median line, laying open the pelvis and entire length of the ureter, the kidney substance is found to be almost totally destroyed and replaced with abscess cavities, between which are dense, hard deposits of inflammatory exudate and fibrous tissue.



The lining membrane of the abscess cavities is pale-yellow in color, rough, and thickened. The pelvis or hilum has been obliterated by fibrous deposits and subsequent contraction. The ureter walls are one centimeter in thickness, dense, white,

and fibrous, and the lining membrane pale-yellow, thickened, and covered with a pale-yellow, viscid pus.

"Inoculations and smears on cover-glasses were made from the pus of the abscess cavity and from the pus of the ureter, and tubercle bacilli found. Pus from this abscess was injected subcutaneously into two guinea-pigs, both of which died in five weeks of general miliary tuberculosis."

The operation was entirely retroperitoneal, and it was astonishing with what ease the large, adherent kidney and the greatly thickened and universally densely adherent ureter was removed. The incision extended from the border of the ribs on the right semilunar line to a point one inch interior to the anterior superior spine, and in order to facilitate the ligation of the ureter on the bladder it was extended to a point just within the opening of the sinus to the inner side of the lower portion of Poupart's ligament. After the kidney and the ureter were removed the sinus was explored. It did not enter the peritoneal cavity, but took a course directly backward between the brim of the pelvis and the psoas muscle. It closely hugged the bony pelvis, and then took an inward and upward direction toward the vertebral column. Its whole course lay behind the psoas muscle, and consequently it did not appear in seat of operation. It evidently did not lead to either the kidney or the ureter in any part of its course. From this I concluded that the original abscess was probably a psoas abscess.

The wound healed by first intention, and the patient left the hospital in the fourth week and went to visit friends in the country, where she remained about three weeks and gained eight pounds in weight. About that time she began to suffer sharp, darting pains in the pelvis. Night sweats and chills returned, and there was a sensation of weight in the right pelvis. The abdomen became tympanitic and greatly swollen, especially on the right side. No mass could be detected, but there was a suspicion of fluid. The pelvic examination was unsatis-

factory, but indicated as before some chronic inflammatory condition. Fearing the presence of another focus of tubercular disease, possibly in the Fallopian tube or in the appendix, I determined to open the abdomen. She was readmitted to the Gyncecan Hospital on December 2, 1907. During the preparatory treatment the abdominal distention entirely subsided. On December 4 I removed a fibrous uterus at the internal os, and both ovaries and tubes and the vermiform appendix. Both ovaries were cystic, and the tubes were the seat of hydrosalpinx. The appendix was thickened, tortuous, and adherent. There was no macroscopic or microscopic evidence of tuberculosis of the organs removed at the operation. The caput ceci was hyperemic and deeply injected.

At this operation the sinus was again explored, but as before was found to be en-

tirely retroperitoneal. The patient made a rapid convalescence. She gained ten pounds in four weeks, and returned to Bar Harbor on January 10, 1908, weighing 136 pounds, or a total gain of 29 pounds since the first operation. She writes that she has never felt better in her life and is still gaining weight. The sinus is still open, but slowly drying up.

From what I have observed in this case I am inclined to believe that the original abscess was a tubercular psoas abscess, and that the kidney became infected through the blood channels. There was no evidence of an ascending infection from the sinus through the bladder and urethra. If such had been the case there would have been more pronounced vesical symptoms and both kidneys would have been affected. The pelvic lesions were probably entirely independent.

THE OPIUM HABIT IN NORTH CHINA.

BY JAMES H. INGRAM, M.D., TUNGCHOW, CHINA.

Opium has been smoked in this part of China for more than sixty years. Perhaps from two to five out of every ten are users of the drug. The prevalence of the habit is much greater in some sections than in others. In the province of Shansi the natives affirm that "eleven out of every ten use opium." There, cities formerly large are at present without inhabitants. The people having fallen a prey to the habit, were reduced physically and financially; thus pestilence and famine made short work, and the once prosperous cities stand tenantless. The writer will hold himself in readiness to accompany or send under proper escort any person or persons who may be desirous of investigating the havoc wrought by opium in this part of the empire.

In this vicinity the great bulk of smokers when asked how they acquired the habit will reply that they were driven to it for the relief of some malady, such as hemoptysis, diarrhea, neuralgia, etc. The physical condition of the smokers varies greatly. One of the common symptoms is

a nasal twang of the voice; this generally remains even after the patient is thoroughly cured. The complexion is more or less sallow. If the individual uses it without moderation the face is edematous and he is incapacitated for either mental or physical effort. The appetite of the average smoker is impaired and his energy diminished, consequently laborers frequently apply for help owing to their being unable to perform their required tasks. Besides causing physical weakness the habit consumes time, and for this reason also they are more or less handicapped. The smokers are frequently emaciated, but if they have means to meet the demands of the habit and also provide sufficient food, the emaciation may not become extreme.

Most smokers are aware that the effect of the drug is injurious, but being in its grip they are apparently powerless to resist, and do not awaken to the necessity of reform until they are on the very brink of starvation. Many are the cases where a man has sold his wife and daughters into

the hands of brothel keepers and was face to face with death before he realized that he must give up the pipe.

There are but few cases in which a cure is impossible. These are patients who are suffering from some chronic disease, their vitality being reduced to such an extent that they are without the necessary strength to stand the strain of breaking off the habit. Patients suffering from gangrene have an acceleration of the disease if the opium is withheld. The habit works great havoc with a man's will-power, and this greatly increases the difficulty of effecting a cure. About one-half of those who have taken the cure return to the pipe after a longer or shorter interval.

In treating the habit it is customary to place the patient in a room with others who are undergoing the same treatment; it is best to have patients in the room in all stages of the cure, as those who are farther along are of use in encouraging those who may be discouraged. Use no locks, but have reliable attendants on duty night and day. Provide reading matter and any articles which may interest the inmates. Hot-water bags should be at hand so that the sufferers can themselves fill them for the relief of colic or neuralgic pains. It is far better for the patients to wait on themselves than to be waited upon. An electric battery also attracts the attention and is a diversion. When the distress is acute and none of the above devices are sufficient to hold the attention, a versatile attendant may be able to do much by engaging the patient in conversation.

On admittance, the routine treatment is to search the patient's clothing and bedding (each patient furnishes his own bedding) for opium. It is surprising to see how many take this precautionary step. He is then given a brisk cathartic. It has been found that patients who receive this initial cathartic apparently pass through the trying ordeal experiencing far less difficulty than those who simply have the diarrhea incident on the withdrawal of the drug. If the patient has been a heavy smoker, morphine is given in diminishing doses for three

or four days, when it is entirely withdrawn. The medicines used are quinine, iron, strychnine, atropine, and cannabis indica.

All the excretions and secretions of the body are inhibited to a greater or less degree by opium, with the exception of the urine; consequently upon its withdrawal these functions still operate with the same energy which was needed to overcome the inhibiting influence of opium. The result is, in severe cases, that these functions simply run wild unless checked by proper medication, and even then they may be beyond control for a few days. The eyes water, coryza is troublesome, vomiting is persistent, and constipation gives place to diarrhea, attended with much colic. The perspiration is profuse, and after a few days nocturnal emissions greatly worry the patient. Between the third and sixth days the discharges from the bowels have a black, tarry appearance, which disappears in from twenty-four to thirty-six hours. This seems to be pathognomonic of opium users. Should these characteristic stools fail to appear, there is ground for suspecting that the patient is being secretly supplied with opium.

In addition to the above train of afflictions there is insomnia and anorexia, mental depression, and neuralgic pains. The countenance becomes more and more dusky until after the black stools have given way to normal discharges; in very severe cases this may not be before the ninth day. Then suddenly a great change comes over the sufferer: there is a desire for food, there is color in his cheeks, and the patient is hopeful; but should the next day be cloudy, the mental depression, neuralgic pains, and the craving for the drug return to a greater or less degree. Patients frequently ask for a supply of tonic medicine to keep on hand to bridge them over cloudy weather. The patients are kept under treatment about fifteen days. By this time they have perceptibly gained in weight; the appetite is similar to that experienced after a run of fever, and it continues thus for more than a month; and the increase in weight continues for from three to six months.

THE ABUSE OF ARSENIC IN THE TREATMENT OF DISEASES OF THE SKIN AND THE DELETERIOUS RESULTS THAT MAY OCCUR FROM ITS INJUDICIOUS EMPLOYMENT.¹

BY DR. JAY FRANK SCHAMBERG, PHILADELPHIA.

Professor of Diseases of the Skin in the Philadelphia Polyclinic, Philadelphia.

Arsenic has been employed in the treatment of diseases of the skin for over a century. No drug has enjoyed such a reputation in cutaneous therapeutics, nor has any medicinal agent been so extensively used. The great confidence in the efficacy of this medicament is due to several causes. It has long been alleged that the arsenic-eating habits of the Styrian Highlanders improved the complexion of the women. In countries where arsenic is found, it has for many years been the custom to mix white arsenic with the food given to horses to make their coats sleek and glossy. Furthermore, arsenic has been proven to exercise a direct influence upon the epithelial structures of the skin. This has been shown both in lower animals and in the human subject.

Ringer, Murrell, and Miss Nunn (*Journal of Physiology*, vol. 1, No. 4) years ago demonstrated that in frogs poisoned with arsenic the epidermis peels off from the corium within a few hours. The arsenic appears to cause a degeneration of the epithelial cells, the degeneration progressing from the true skin outward.

Brooke and Leslie Roberts (*British Journal of Dermatology*, 1901, p. 121), who studied the changes in the skin in the arsenical beer epidemic in England in 1900, remark that "the skin epithelium has an extraordinary affinity for arsenic: the arsenic passes from the deeper cells of the epidermis to the more superficial until it overflows in the desquamating epithelium." Careful analyses were made by Mr. Kirkby, and considerable quantities of arsenic were found in the scales.

Being the only known drug to act directly upon the skin, it is not surprising that arsenic should have come into extensive use in the treatment of cutaneous diseases. The enthusiastic laudation of arsenic by Dr.

Hunt many years ago, and by other writers from time to time, has further stimulated the employment of this drug in skin affections.

At the present day arsenic remains still the practitioner's friend; it is with many the sheet-anchor of cutaneous therapy. A

FIG. 1.—Overgrowth of the horny layer of soles of feet (hyperkeratosis) due to arsenic ingested in contaminated beer. (After H. G. Brooke and Leslie Roberts: *British Journal of Dermatology*, 1901.)

great many practitioners still employ it indiscriminately whenever a skin disease presents itself.

STATUS OF ARSENIC AMONG SPECIALISTS.

What is the status of arsenic among specialists in the treatment of diseases of the skin? With the advances that have been made in cutaneous medicine in the past two decades, the reputation of arsenic among those best qualified to judge has enormously suffered. The drug is far less employed by dermatologists at the present day than by the general practitioner. I would not be understood to say that arsenic is not a remedy of value. It is distinctly useful in some dermatoses, and in a few diseases it acts at times as a specific, but the cutaneous

¹Read before the American Therapeutic Society, May 8, 1908.

FIG. 2.—Arsenical pigmentation of body due to arsenic in contaminated beer. Comparison with skin of normal person. (After H. G. Brooke and Leslie Roberts: *British Journal of Dermatology*, 1901.)

diseases in which it is of value are few: moreover, it fulfils one's expectations in only a proportion of these cases, and when given at the proper period of the disease.

I am in the habit of telling students that arsenic finds its greatest field of usefulness in the three P's—in psoriasis, pemphigus, and planus (lichen planus).

Arsenic is an old and classic remedy in *psoriasis*, and in a certain (or rather uncertain) proportion of cases it exerts a beneficial influence upon the eruption; in many cases, however, it fails completely. It is contraindicated during the developmental stage of acute eruptions, whenever the patches are highly inflammatory, and always when there is a sensitive or disturbed gastrointestinal tract. Indeed, such conditions constitute general contraindications to the employment of arsenic in skin diseases.

In *pemphigus*, arsenic was formerly regarded by Jonathan Hutchinson as a specific for the state of health upon which relapsing pemphigus depended. In the pemphigus of children, arsenic acts at times almost like a specific. In a relapsing pemphigoid eruption following vaccination in a young boy under my care, the administration of arsenic was repeatedly followed by a disappearance of the eruption, and its withdrawal by a relapse. Most writers are agreed, however, that the chronic pemphi-

gus of adults is but little influenced by arsenic.

In *dermatitis herpetiformis*, an allied disease, arsenic is likewise more valuable in children than in adults.

Lichen planus is another affection in which arsenic used to be regarded as a specific. While it is of distinct value in some cases in the later stages, it has in a measure been superseded by other remedies.

The above mentioned dermatoses are the diseases in which arsenic was for years considered an incomparable remedy. As time goes on we find its usefulness in these affections more restricted, and its place at times better filled by some other medicinal agent.

If such a statement is true concerning the diseases in which arsenic was particularly prized, what is to be said concerning its value in other skin affections? Arsenic is constantly prescribed by practitioners for acne and for eczema.

In *acne* it is of less utility than in any

FIG. 3.—Acute arsenical pigmentation after ingestion of the drug for a month. (Case referred to in text.)

other dermatosis for which it is used, and is far more prone to do harm than good: I have repeatedly seen a gastroenteritis set up as a result of the use of large doses of arsenic, and with this an aggravation of the acne.

Arsenic is at times of value in recurrent vesicular *eczemas*, and in some papular and squamous *eczemas*, when there is a lowering of the general nerve tone. That arsenic, however, as generally employed works more harm than good in eczema is a statement that will be indorsed by most specialists in diseases of the skin.

That the views here expressed may not be regarded as being merely those of an individual, and at variance with authoritative opinion, I quote the statements of several well-known dermatological writers:

Crocker says: "Arsenic is contraindicated in nearly all acutely inflammatory affections, which are often aggravated by it, and the pruritus is generally much increased in affections dependent on indigestion or other irritable conditions of the alimentary canal, owing to its irritating the gastric mucous membrane, as in most cases of acne rosacea, dyspeptic urticaria, and active eczematous eruptions; indeed, it is scarcely ever necessary or even desirable in eczema, although largely prescribed by many practitioners. Even in psoriasis, and other diseases where it is generally suitable, it should not be commenced until all derangements of health, other than that of the skin, have been rectified as far as possible. Arsenic is seldom of any benefit in deep-seated inflammations, or in non-inflammatory affections, but Köbner has found good results in hypodermic injections for multiple sarcomata.

Hyde and Montgomery write as follows: "An unprejudiced view of the value of arsenic, even in cases properly selected for its internal administration, justifies the conclusion that it is in diseases of the skin a remedy of uncertain effect, and in that proportion disappointing. After collation of the experience of experts, it has been shown that the common practice of giving arsenic in many cutaneous diseases is both

harmful and irrational, not merely because of its effect in inducing cutaneous congestion and pruritus, but also because of the reliance placed upon it to the exclusion of other and better methods of treatment, and that the beneficial effects supposed to follow its administration are often due to other causes. No series of carefully recorded cases have ever been published in which notable therapeutical results have been

FIG. 4.—Arsenical pigmentation (same patient). The darker patches are senile keratoses, which are said by the patient to have existed previously.

known to result solely from its administration. Even in pemphigus, psoriasis, chronic eczema, and lichen ruber, in which arsenic has been thought to possess special efficacy, it has in cases conspicuously failed."

The foregoing remarks indicate that arsenic is by no means as curative a remedy in diseases of the skin as is believed by the profession at large. Another fact not adequately recognized is that arsenic used therapeutically in large doses or in small doses

fatal, were encountered in the various towns of central England within a short time. This epidemic might be regarded, in the language of several of its investigators, "as an involuntary experiment in experimental pharmacology."

The cutaneous manifestations were numerous and varied. The most common complaint of the patients was heat, swelling, and pain in the hands and feet: indeed, the incriminated beer was popularly called "tender-foot ale." The palms and soles were red, and there were varied disturbances of sensation. Erythromelalgia was closely simulated in many cases. In other cases there were red, bluish, or livid erythematous blotches; suffusion of the face and eyes, desquamation, and keratosis of the palms and soles. There were also in some cases papular, vesicular, and bullous eruptions. Itching was often persistent. Extensive pigmentation of the body of a brownish or blackish color was one of the most conspicuous effects. In some patients the body was almost as black as that of a negro.

Chemical analysis, of the contaminated beer showed a considerable variation in the arsenic content. In many instances, approximately 1/100 of a grain of arsenic was contained in a half-pint of beer; three

FIG. 5.—Nodular cancer of leg due to protracted use of arsenic in a psoriatic subject. (Case referred to in text.)

for prolonged periods is capable of exerting a noxious effect upon the skin and upon other important structures of the body. Cases in which serious and even fatal injury to tissues has resulted from the use of arsenic are gradually accumulating.

The injurious effects of the drug may be due to the administration of large or massive doses during a short period of time, or may result from the use of small doses over protracted periods. In some instances toxic effects follow the employment of small doses in persons who are the subjects of an idiosyncrasy.

Apart from the irritative influence of arsenic upon the digestive tract, the noxious effects are exerted particularly upon nerve structure and upon the skin. The frequency with which arsenic may produce a multiple neuritis, with all of its unfortunate concomitants, was shown in the contaminated beer epidemic in England in 1900. Thousands of such cases, a number of them

FIG. 6.—a, Mass of epithelial cells proliferating in a dilated lymph space. (Section of nodular arsenical cancer of leg.)

glasses would represent, therefore, the average medicinal dose. To be sure many of the patients consumed the beer in enormous quantities.

Cutaneous disorders are not infrequently observed to follow the therapeutic use of arsenic. The most characteristic manifestation is a generalized pigmentation of the body. Such a case came recently under my observation. A well-preserved man of seventy-one years consulted a physician for itching of the legs. He was given Fowler's solution in doses varying from 5 to 18 minims, three times a day. He shortly after-

ward developed upon the leg, and another at the base of the thumb which ultimately required amputation of the hand.

That the long-continued administration of arsenic may result in epithelial cancer was asserted by Jonathan Hutchinson a number of years ago. M. B. Hartzell reported a case before the American Dermatological Association in 1899, and found in the literature records of ten cases of cancer in psoriatic subjects, seven of whom were known to have taken arsenic over protracted periods of time. In the discussion that followed Hyde reported a case of arsenical keratosis of the hand followed by epithelioma, necessitating amputation of a finger, and James C. White an additional case of the same condition leading to an amputation of a toe. Brocq, of Paris, published a case of multiple skin cancers in a man thirty-five years old suffering from chronic bronchitis, who in fifteen years had swallowed a liter of Fowler's solution.

CONCLUSIONS.

1. It may be generally stated that arsenic is a drug of undoubted value in a limited number of skin diseases, especially in psoriasis, lichen planus, and acute pemphigus. It is useful in the quiescent stages of the first two diseases when the active inflammatory symptoms have subsided. Even when used in appropriate cases and at the proper stage, it often fails lamentably to fulfil one's expectations. It is, therefore, a remedy of great unreliability. In the remaining long list of skin affections, arsenic is either of slight value or of no utility whatsoever. It sometimes accomplishes some incidental good in skin diseases when its administration is indicated by the condition of the patient's nervous system.

2. Arsenic is excessively and indiscriminately prescribed by practitioners in the treatment of skin diseases. Evidence of its frequent and unnecessary administration is too often brought to the attention of the specialist. The practitioner's rule appears to be "when in doubt as to treatment, give arsenic." The specialist on the other hand withholds arsenic except when specially indicated. Those who are best qualified to

FIG. 7.—Multiple ulcerations upon both legs following the long-continued use of arsenic in a psoriatic subject. Pain, swelling, and other evidences of neuritis were present.

ward visited another physician, who likewise prescribed arsenic. In about a month the patient took 400 minims of Fowler's solution. There rapidly developed an extensive brownish pigmentation of the body, which is well shown in the accompanying photographs.

Another characteristic symptom of chronic arsenicism is overgrowth of the horny layer of the palms and soles (hyperkeratosis). At times warty growths develop in these regions. In rare instances, hyperkeratosis may eventuate in cancer of the skin. In 1906 I reported a case before the American Dermatological Society of a man suffering from psoriasis for thirty years, who had taken arsenic in large doses at various intervals during this time. This patient developed keratotic patches over the trunk and extremities, and in addition a number of skin cancers. A hickory-nut-sized can-

judge find that other remedies, internal and local, in many instances render the use of arsenic unnecessary.

3. Arsenic is a potent drug exercising a stimulating and later an irritative influence upon nerve structure. When used in too large doses or over protracted periods, it may produce profound structural changes in the nerves. Sensory, motor, and trophic disturbances of a serious character have resulted from its injudicious use.

4. The noxious influence of arsenic is often exerted upon the skin. Not only are inflammatory dermatoses commonly aggravated by its use, but a great variety of skin manifestations may be produced by toxic doses. In chronic arsenic poisoning, erythematous, papular, and vesicular eruptions may appear simulating various dermatoses. A generalized pigmentation occasionally develops, and hyperkeratosis of the skin, especially of the palms and soles, is not uncommon. A considerable number of cases of cancer of the skin have now been reported following the long-continued use of arsenic. Some of these have necessitated amputation of members, and at least four cases have terminated fatally.

5. In view of the serious results mentioned, practitioners should exercise more caution in prescribing arsenic. The drug should not be administered unless there is a good reason for its use, and above all patients must be instructed not to continue the remedy upon their own judgment, as is so commonly done. Physicians should not permit prescriptions for arsenic to be renewed without their specific sanction.

CALMETTE'S OPHTHALMIC REACTION TO TUBERCULIN.

SMITHIES and WALKER in an article in the *Journal of the American Medical Association* of January 25, 1908, reach the following conclusions:

From the results of their work they are convinced that the ophthalmic reaction as directed to be practiced by Calmette and others is of undoubted service in the diagnosis of tuberculosis. In no case where its worth could be tested clinically by the

finding of tubercle bacilli did they fail to obtain decided ocular manifestations following the instillation of the tuberculin. This reaction did not follow when instillations were made in the case of 126 individuals affected with diseases other than tuberculosis. It was not obtained in 74 apparently normal adults.

A proper technique for administration is necessary for the success of the reaction. Whether or not smaller dosage would produce recognizable effects is not at present fully decided. Reactions have, however, been obtained when suspensions of 0.5 per cent were used.

When positive reaction follows promptly on the first instillation, it appears that the diagnosis of tuberculosis is reasonably certain. The fact that a reaction thus appears does not mean that the subject is affected with an active tuberculous process, although the evidence is strongly in favor of such. Presupposing this might, in some instances, lead to unnecessary alarm and much inconvenience. The ophthalmic reaction, as is the case with every form of tuberculin test, must be accompanied by complete examination of the suspected focus in order to be judged properly. All suspicious cases which fail to respond to one instillation should be reinstalled from two to five times, and careful examinations, local and general, made after each instillation.

Too little work has as yet been done to allow conclusions to be drawn regarding the relative value of the ophthalmic reaction, the subcutaneous or the skin reactions to tuberculin. In seven of these cases, in which both the subcutaneous and ophthalmic reactions had been tried, positive evidence was furnished in each case. They have had no experience with the cutaneous reaction. None of the reactions take the place of thorough examination of the patient, from every view-point. They are all confirmatory. Properly administered, they believe that the accumulation of more data will show that the ophthalmic reaction is quite as valuable to the general practitioners as are any of the others. Its convenience and rapidity of action certainly commend it.

EDITORIAL.

THE USE OF MAGNESIUM SULPHATE AS AN EXTERNAL APPLICATION.

There can be no doubt whatever that all efforts to increase the rational use of remedies should be encouraged by every possible means, and that empiricism should be frowned upon if a scientific explanation for the employment of a given plan of treatment can be discovered. On the other hand, it is undoubtedly a fact that a very large part of our knowledge of therapeutics to-day depends upon experience and is based on empiricism, and no active practitioner who reads this article can truthfully deny that many of the remedial measures to which he resorts act in a way for which he can by no means always adduce a satisfactory explanation. This condition of affairs depends in part upon the fact that each individual patient is, to a certain extent, a law unto himself, and that almost every individual reacts to remedies in a somewhat different manner. Furthermore, it depends upon the fact that physiology and pathology have as yet failed to explain many pathological conditions, and until they have done so, it is impossible to discover how certain remedies accomplish their good results. That such discoveries are of the utmost importance and much to be longed for is universally recognized, but until they are made we have to be content with empiricism. No better illustration of this can be found than the use of quinine for generations before the malarial parasite was discovered, or the purely empirical use of the salicylates before it was found that acute articular rheumatism was an infectious disease.

Another excellent illustration of the fact that therapeutics sometimes advances faster than scientific research is to be found in the paper of Dr. Tucker which appears in our original columns in this issue. Readers of the THERAPEUTIC GAZETTE will recall that about a year ago Dr. Tucker published an

equally interesting paper in which he reported the extraordinary results which he had obtained in the treatment of orchitis by wrapping up the scrotum in a saturated solution of magnesium sulphate; results which have been confirmed by a considerable number of clinicians, and which are referred to with approval by Dr. Belfield in his article upon genito-urinary diseases in the recent issue of *Progressive Medicine*.

Although the writer of this editorial has not had the large experience in the local application of magnesium sulphate that has been had by Dr. Tucker, experience so far at hand leads him to believe that Dr. Tucker's reports are in no way exaggerated, and that a most useful method of combating local inflammations has been introduced by this active clinician. In the treatment of acute articular rheumatism, erysipelas, and in the relief of pain associated with local inflammation, this plan of treatment certainly gives extraordinary results in a large number of cases, and we can cordially commend it.

Although we can confirm the results obtained by Dr. Tucker, we are forced to admit with him that the use of this old-fashioned remedy in a new way is purely empirical. The suggestion that a saturated solution of magnesium sulphate produces its effects by influencing osmosis is scarcely adequate to explain the results which are obtained, since other salts which might influence osmosis do not produce the same results. It is rather a remarkable thing that so old and so homely an internal remedy as magnesium sulphate should be found at this late date to be so useful as a local application. It is also to be remembered that Meltzer and his collaborators have been able to successfully treat a certain number of cases of tetanus by the intraspinal injection of the same salt, illustrating the fact that it has an even wider field of usefulness than has been indicated.

A THERAPEUTIC NOTE IN REGARD TO ANGINA PECTORIS.

In a very considerable proportion of cases of angina pectoris the careful physician discovers that there is present an abnormally high arterial tension. This discovery, combined with the fact that the nitrites are known to possess the power of reducing this tension to a marked extent, has led many physicians to ignore the fact that all cases of angina are not accompanied by high tension, and that nitrites are not always needed. Further, some of those cases that are characterized by high tension develop the high tension because of pain, and do not develop the pain because of the high tension, the fact, well known to the laboratory investigator, being ignored, namely, that pain is a powerful stimulant to the vasomotor center. The result is that while the nitrites are exceedingly valuable in a certain proportion of cases, they are actually abused if they are used in every case. In other words, it is essential that a careful study of each patient shall be made before the nitrites are administered in full doses.

In a recent article published in *Folia Therapeutica* by Dr. Clifford Allbutt, he points out that a certain number of cases of angina are probably induced by reflex influences; that through these reflex influences impulses are passed down the pneumogastric fibers and powerfully influence the action of the heart, which factors are largely responsible for the slow, deliberate, and laboring pulse so characteristic of an attack of angina. He calls to mind that in many of those instances in which morphine does so much good when given hypodermically, it produces its excellent results not only by relieving pain but by diminishing excessive reflex activity, and also, perhaps, by causing relaxation of certain areas of the blood-vessels, which, being in spasm, throw upon the heart too severe a labor. He also advises the employment of full doses of atropine, calling to mind the well-known fact that this drug is a powerful sedative or depressant to the peripheral ends of the vagi, and that by its use we may block impulses which, arising in

the pneumogastric center, would otherwise reach the heart, and thereby cause the conditions which are associated with angina. He also points out that although rest in bed is, for many cases of high arterial tension, an exceedingly valuable measure, yet rest in bed, unless carefully watched, is in the aged by no means a harmless method of cure, and if indiscriminately applied may produce disaster. Thus although putting the patient to bed reduces his tension and diminishes the action of a laboring heart, Allbutt asserts that to put an old man to bed for weeks may consign him to a living grave, and may result in his lungs becoming edematous, and his energies flagging. This danger, however, we consider rather remote, if the patient is under careful observation, and if massage is used as a means to maintain the circulation of the blood and to dilate the cutaneous and subcutaneous vessels in such a way as to produce less obstruction to the flow of blood.

In regard to the use of baths in angina pectoris Allbutt considers that they are "risky" in high-pressure cases, at any rate, and he adds: "I know that at certain spas, even in angina pectoris, baths are prescribed, but spa reports require for their assimilation more salt than is always at hand"—a sentence which at once possesses a double significance when it is carefully studied, and at once contains a truism and a pun.

DANGER IN THE USE OF WIDELY SEPARATED DOSES OF DIPHTHERIA ANTITOXIN.

It has long been known to laboratory workers that the introduction of blood serum of one animal, or of one human being, into another produces certain effects in the recipient's body which are of considerable importance, but it has only been within the last few months that the profession has come to realize that these effects may, in certain instances, be exceedingly dangerous, although accidents arising from this cause are so few as to not in any way militate against the employment of that val-

uable remedial agent antitoxin. So many hundred thousand doses of diphtheria antitoxin have been given, and so few cases have been reported in which dangerous or lethal results have developed, that our increasing knowledge rather gives us confidence in the value of the agent than fear of the conditions which it may produce. As our readers well know, a number of cases have now been reported in which, following the administration of a dose of diphtheria antitoxin hypodermically, great dyspnea, lividity, and sudden death developed. For these cases there is as yet no accurate explanation. They are undoubtedly due to some idiosyncrasy on the part of the patient to horse serum, and not dependent upon any fault of the serum itself, and, so far as we know, it is not possible to determine beforehand that such an idiosyncrasy exists.

In this connection it must be remembered that occasionally individuals are met with who have extraordinary idiosyncrasies toward drugs to which many persons have very slight susceptibility. More than one case is recorded in which death has followed moderate doses of the iodides, and symptoms not far distant in their character from those described as produced by diphtheria antitoxin have followed the use of quinine in doses which most practitioners would consider very moderate. So, too, the salicylates, and a number of other drugs, have been correctly accused of producing symptoms in certain persons which were most unusual. Fortunately, these exceedingly rare catastrophes have in no way prevented the profession from using these drugs in proper quantities in certain cases, and the accidents which have been recorded as following the use of diphtheria antitoxin should not cause the profession to decrease its employment. One of the most recent of these accidents has been recorded by Willis in *Northwest Medicine* for March, 1908. This practitioner reports the employment of diphtheria antitoxin, in full doses, as a remedy for asthma, and quotes a number of professional colleagues as hav-

ing gotten most excellent results from its employment. He records one instance, however, in which its use in asthma, during a paroxysm, was followed by sudden death.

A matter of less importance from the standpoint of life and death, but of equal importance from the standpoint of science, is the development of hypersensitiveness, or susceptibility, to diphtheria antitoxin in persons who have had one or more doses of this agent to combat diphtheria. It is a curious fact that if diphtheria antitoxin is given to an individual hypodermically, and the dose repeated at intervals of a day or so for an indefinite period of time, no deleterious effects ensue. But if a considerable number of days elapse between the use of the first dose and the later ones the patient not infrequently becomes quite ill, suffers from violent urticaria and swelling of the joints, and the condition may be so severe as to cause alarm, although so far as we know no deaths due to this artificially produced susceptibility have as yet been recorded.

This very important subject of sensitization to diphtheria antitoxin, or horse serum, is carefully considered by Dr. Royer in one of the original articles which is published in this issue of the *GAZETTE*. From his paper more than one important clinical lesson can be learned, and without doubt laboratory workers and active clinicians will find much to interest them and stimulate them to research concerning this extraordinary condition which is technically designated by the term "anaphylaxis."

A WARNING CONCERNING THE OPHTHALMO-TUBERCULIN REACTION.

In connection with what has just been said in regard to the "sensitization" of individuals by the injection of antidiphtheric serum, it is interesting to note that a somewhat similar condition may be produced in the eye by the repeated instillation of tuberculin in the so-called ophthalmic reaction in tuberculosis. Attention to this matter has been called, in particular, by Rosenau

and Anderson in the *Journal of the American Medical Association*, and by a number of others. They point out that if tuberculin is dropped into the eye of a perfectly healthy individual and then a second instillation takes place after as long a period has elapsed as fifty-one days a typical reaction, exactly like that which develops ordinarily in a tubercular patient, is produced in an absolutely healthy individual. Indeed, the reaction may be more than ordinarily severe. This point is chiefly of importance in that in a number of instances physicians who have dropped a tuberculin solution into the eye with negative results have been very properly led to believe that tuberculosis was not present in any part of the body, and then on instilling tuberculin into the eye some weeks afterward have been amazed to get a sharp reaction, which has led them to believe, first, that their patient was really tubercular, and secondly, that the tuberculin first employed was worthless. As a matter of fact the first instillation has sensitized the patient in such a way that the second instillation produces a reaction independent of the presence of any tubercular process. The secondary reaction which develops under these circumstances has no value from a diagnostic standpoint, and should never be considered as reflecting upon the quality of the tuberculin which was first employed.

CEPHALOHYDROCELE IN INJURIES OF THE HEAD IN YOUNG CHILDREN.

Because of the flexibility of the bones constituting the infant's skull, the non-union of sutures and imperfect ossification, there is a general belief to the effect that fractures of the cranial bones in infants and young children are extremely rare. Indeed, experience apparently supports this concept since great distortion may result as the effect of traumatism, as particularly instanced during quick childbirth, without either immediate or remote clinical evidence of the presence of a break in the bony structure.

None the less it is true that not only may these bones be broken, but that this injury is much more frequent than is commonly believed. Because of the intimate attachment of the dura to the bone this structure is also likely to be injured. As the result of a fissure with dural injury there may result a swelling which can be felt beneath the scalp, and which may exhibit both pulsation and increased tension incident to higher intrathoracic pressure, as for instance that which occurs during crying.

Drew (*Practitioner*, April, 1908) reports an interesting case of this kind. A child, six weeks old, fell from the bed, striking upon its head. Some hours later it was found to have a large swelling over the right parietal bone, which gradually increased and became markedly tense when the child cried. During the first two days twitching was noticed in the left arm and leg; there was no loss of consciousness after the injury. On pressing through the swelling a horizontal gap could be felt in the bone, and this gradually increased in size until, on the sixteenth day after the accident, it was fully half an inch in width.

A flap of the scalp was turned down off the tumor and the sac opened. The fluid was found to be lying beneath the separated periosteum, which formed the wall of the sac, and was evacuated. A fracture $1\frac{1}{2}$ inches long, situated horizontally in the center of the parietal bone, was exposed, the edges of the bone being widely separated, and through the center of the opening a hernia cerebri protruded. The gap in the bone was closed by a stout silver wire suture, the periosteum was replaced and sutured, and the scalp wound closed. The child promptly recovered.

Drew calls attention to the fact that many of the hematomata found on infants' heads as the result of injury are doubtless associated with unsuspected fissure fracture, and instances one case in which he found this condition on operation.

It must lie within the clinical experience of most practicing physicians to have encountered cases in which, after an injury

to an infant's head, apparently trivial, there has formed beneath the tissues of the scalp a tumor which in the course of a few days has slowly or rapidly increased in size and has exhibited both pulsation and increased tension. The great majority of these tumors exhibit after this period little tendency to increase. Under a pressure bandage they remain stationary for some days and then rapidly subside, the fissure and laceration of the dura which must have been present to allow of such condition rapidly closing. Frequently these accumulations are treated by aspiration or tapping, the fluid withdrawn being always bloody within the first few days of injury. It reaccumulates even more rapidly than before it was withdrawn. This treatment does not seem a desirable one unless the tension beneath the scalp be so great as to seriously threaten the vitality of the overlying tissues, a condition which theoretically could hardly obtain.

Drew's case proves conclusively that in some instances the original bone injury is so extensive that the tendency toward spontaneous cure is replaced by a tendency toward a rapid opening of the fracture. Under such circumstances the indications for operation are of course imperative, yet it would seem difficult to account for such a condition of affairs in the absence of hydrocephalus.

THE PRECIPITIN REACTION IN HYDATID DISEASE.

Perhaps few surgical affections occasion more diagnostic difficulty than the development of the hydatid cysts in countries where they are not commonly encountered. Since such cysts may grow in any part of the body and are slow in development, they may readily be confounded with neoplasm; even when they attain great bulk and are obviously fluctuating their true nature is often not recognized until operation. A means of differential diagnosis which is fairly reliable and practical in its application is therefore of great importance.

Welsh and Chapman (*Australasian Med-*

ical Gazette, Jan. 20, 1908) have corroborated the findings of Fleig and Lisbonne in nine cases, all having given a positive precipitin reaction. This reaction is based on the theory that the body fluid of a man suffering from parasitic invasion contains antistances directed specifically against the protein molecules of the parasite, and that in particular precipitins may appear and their presence may form the basis of a test of diagnostic value.

Welsh and Chapman find that when blood serum is mixed with a suitable hydatid fluid and the mixture allowed to stand from eighteen to twenty-four hours at room temperature, a well-marked precipitate never fails to appear if the serum be taken from a patient certainly affected with hydatids, and that such a precipitate does not occur when the serum is taken from a person not so infected. They note that the antiserum developed in a hydatid patient is of low precipitable content, and that about 12 drops of the antiserum are required to yield a satisfactory amount of deposit. They draw not less than one cubic centimeter of blood and employ only a clear serum free of red cells. To make the hydatid serum absolutely clear they pass it through the Chamberland filter. They note that as the result of tests hydatid cyst fluids appear to vary greatly in their capacity for interaction with the serum of a hydatid patient, and that a hydatid fluid which reacts strongly with the serum of the patient from whom it was obtained reacts also strongly to all other hydatid patients.

As to the prognostic bearing of this reaction, they observed that the persistence of a marked reaction some weeks after operation probably indicates the continued presence of the parasite, but disappearance of the reaction does not necessarily indicate complete removal of the cysts. The number of cases reported is too few to conclusively establish the value of this test. Moreover, a number of observers have failed to elicit it to their satisfaction.

The authors of this paper, while they express themselves as well convinced of its

value, have reported an instance where the reaction was far from satisfactory with one hydatid fluid, though it was characteristic with another. The application of the test is, however, rapid and easy, and it well may be that though its negative value is slight, its positive value may be found fairly reliable.

SUPRAPUBIC PROSTATECTOMY.

Partly because of the alleged greater ease of the operation, in spite of its generally conceded mortality, and partly because the functional results, especially those in relation to the preservation of sexual function, are popularly supposed to be better, suprapubic prostatectomy as a routine operation still has its enthusiastic advocates, among whom can evidently be numbered Ward (*Birmingham Medical Review*, March, 1908), who reports 109 cases which express the results of the work of six surgeons. Of 109 operations performed during the first five years there were 22 deaths, a mortality of 20 per cent, while of 128 operations performed in the last two years there were 13 deaths, a mortality of 10 per cent. During the year 1907 there were 70 operations, with 4 deaths—i.e., barely 6 per cent. Of the important complications hemorrhage is first noted, which rarely occurs to an alarming extent. Epididymitis is a complication of moderate frequency, occurring about the time the wound begins to heal. Pelvic cellulitis is rare, only one instance being recorded in a series of cases in this record. But a single instance of stricture is recorded; moreover, but one instance of incontinence of urine was encountered. This in a patient suffering from locomotor ataxia at the time of operation and with Charcot's disease of the right shoulder-joint. There is also one instance of persistent fistula eighteen months after opera-

tion. Stone reformed twice in bladders already calculous, and in one instance the stone developed in the prostatic cavity. In 22 cases of the series in which death followed the operation, uremia was the cause of death in 5 cases; sepsis and gradual exhaustion, 5 cases; pneumonia, 3 cases; shock, 3 cases; marked abdominal distention, for which colotomy was done without relief in one case, also probably uremic; acute mania in one case, also of uremic origin.

As to the ultimate results, only eight of the patients cured were able to sleep throughout the night undisturbed by any call to urinate. Pain was cured, usually the size and force of the stream was restored to normal, difficulty in starting or completing the act of micturition was completely removed, and control of micturition was usually perfect. In a few instances the patient stated that occasionally when coughing or straining severely a few drops of urine might be passed into the urethra. As to the sexual function, a certain number of the patients retained this. The author states that he has been surprised at the number of these old men who still regularly enjoy sexual intercourse. In about 50 per cent of the cases the bladder fails to empty itself completely after operation. The average quantity present was about two drachms, but it varied from a few drops to in one case as much as four ounces.

This paper constitutes, with the exception of Freyer's writings, perhaps the strongest argument which has yet been adduced in favor of the suprapubic operation. The low mortality in recent years is particularly striking and apparently affords a strong argument in favor of large experience as a necessary factor in becoming perfect in the technique. Perhaps one of the surprising features of this report is the comparatively small number of malignant prostates encountered by the author.

REPORTS ON THERAPEUTIC PROGRESS.

A NEW MERITORIOUS EXTERNAL ANTISEPTIC PREPARATION.

The *Medical Standard* for December, 1907, contains a paper by HARBOLD in which he tells us that he has been dispensing the following preparations for nearly four years at the Pennsylvania Hospital, and they have given entire satisfaction to all who have had occasion to employ them:

Antiseptic Glove Lubricant.—On entering upon his duty as apothecary at the hospital he was frequently asked by the surgeon on duty to procure for him some lubricant that would facilitate the putting on and removal of rubber gloves. As there are numerous preparations of this kind on the market, and as it invariably happened that no two surgeons agreed in their choice of variety, the author was obliged to add to his stock of preparations continually, and encounter annoyance from time to time through the delay of the wholesaler in supplying special preparations when same were not carried in stock. To avoid this inconvenience, he made a standard preparation, which has been in use at the hospital extensively ever since. In the use of this preparation he has overcome delay and annoyance, and has a far more economical product.

The following is the formula, which may be modified to suit the various needs:

Tragacanth, 1 ounce.
Boracic acid, 4 drachms.
Formaldehyde, 1 drachm.
Oil gaultheria, 5 drops.
Oil rose geranium, 3 drops.
Alcohol, 4 ounces.
Water, 24 ounces.

Dissolve the tragacanth in water, in which the boric acid has previously been dissolved. Dissolve the oils in the alcohol, and add this solution portion by portion to the mucilage of tragacanth, shaking the mixture after each addition. Then lastly add the formaldehyde.

The value of the above preparation is enhanced by the increasing use of rubber gloves. It is non-greasy, non-irritating,

smooth, of perfect consistency, and may also be used to lubricate surgical instruments, catheters, and sounds.

Antiseptic Flexible Collodion.—This is a modification of a formula by Dr. Hopkins, and it has entirely replaced the official flexible collodion at the Pennsylvania Hospital. The surgeons find it especially satisfactory in closing punctures, dressing wounds, and as a protective covering after suturing in surgical operations:

Guncotton, 10 drachms.
Alcohol, 6 ounces.
Tinct. benzoin, 3 ounces.
Sulphuric ether, 25 ounces.
Mercuric chloride, 1:200.

Dissolve the guncotton in the ether, shaking until it becomes the consistency of paper pulp; then add the tincture of benzoin and shake the mixture thoroughly. To this mixture add the alcohol, in which the mercuric chloride has previously been dissolved.

Hand and Toilet Lotion.—This latter is non-sticky, non-greasy, and non-irritating. It is bland and smooth, and of perfect consistency, requiring no shaking before use, and has antiseptic properties as well:

Tragacanth, 2 drachms.
Quince seed, 15 drachms.
Borax, 6 drachms.
Boric acid, 8 drachms.
Glycerin, 10 ounces.
Alcohol, 10 ounces.
Perfume, q. s.
Color, q. s.
Sodium benzoate, 3 drachms.
Boiling water, 5 pints.
Water, q. s., 8 pints.

Dissolve the tragacanth in two pints of water, stirring until dissolved, or until it becomes a homogeneous mixture. Steep the quince seed in boiling water for four hours, stirring frequently; then strain carefully. Dissolve the borax, sodium benzoate, and boric acid in the remainder of hot water. Add the perfume and glycerin dissolved in the alcohol, and finally the tragacanth and quince-seed mucilage, which had previously been mixed, portion by portion, shaking after each addition, in order to get a thoroughly homogeneous mixture. The consistency may be varied by addition of water.

This is not only a highly satisfactory

preparation, of which they use more than thirty gallons at the hospital annually, but it can be made more economically than the benzoin, glycerin, and rose-water mixture, more or less of the gum being precipitated in the latter preparation even when made with hot water, resulting in an inelegant and unsightly mixture.

In the above preparation tincture of benzoin may be incorporated with more satisfactory results than can be obtained with the benzoin, glycerin, and rose-water preparation, if done carefully, as there is more body to the preparation in which to suspend the benzoin. However, it must be remembered that if tincture of benzoin is to be added, it should be dissolved in the alcohol, perfume, and glycerin before mixing with the mixture of tragacanth and quince-seed mucilage.

THE OPHTHALMO-TUBERCULIN TEST.

On June 17, 1907, Professor CALMETTE presented to the Academy of Science a communication in which he detailed some observations with a special tuberculin which he employed for diagnostic purposes. It is dropped into the eye, and causes in those affected with tuberculosis—wherever the lesion may be located—a conjunctival reaction, which does not occur in the non-tuberculous. To avoid the irritating effects of glycerin on the conjunctiva he employs a solution in sterilized distilled water of dried tuberculin precipitated by alcohol. The reaction occurs from three to five hours after dropping the solution in the eye, and consists in an intense congestion of the palpebral conjunctiva, which subsides after twenty-four to thirty-six hours. Already this new form of the tuberculin test has been largely used by several physicians in the Paris hospitals; who report favorably of its value and delicacy as a diagnostic agent in tuberculosis; and Mr. Sydney Stephenson recently gave an account of its value in ophthalmology in the *British Medical Journal* of October 19, page 1038. The reaction is said to produce but little pain or discomfort and no ill effects on the eye. An edi-

torial writer in the *British Medical Journal* has given it a trial in some twenty cases with satisfactory results.—*British Medical Journal*, Nov. 23, 1907.

PLEURAL EFFUSION AND ITS TREATMENT.

BARR states in the *Lancet* of November 9, 1907, that cases of dry pleurisy require very little treatment except some counter-irritation, a diaphoretic, a purgative, and perhaps a sedative to relieve pain, or some strapping of the chest to limit the amount of movement. The author takes this opportunity of emphasizing the principles which underlie his methods of dealing with effusions into the pleural cavities. At the present time this is the more necessary as he finds that he has a few imitators who have never seen him treat a case, but who think the whole method consists in withdrawing more or less of the effused fluid and injecting a little adrenalin solution. He is not surprised, he says, when he hears that they do not attain the success which almost invariably follows his efforts.

In the treatment of pleural effusion the question often arises, When should we withdraw serum? This is rather an important question and one which is more easily asked than answered. If the effusion is not very great it often gets absorbed after the febrile stage passes off with or without any special medication. Many devices have been advocated to hasten the absorption with more or less success. Being naturally of a conservative frame of mind the author does not care for meddlesome interference with natural processes; consequently, he sometimes gives nature a longer chance than is perhaps advisable. The effusion is a natural process which, if it continue until after the inflammation has subsided, lessens the risk of pleuritic adhesions. It also keeps the collapsed lung quiet, which is very desirable if there be any active tuberculosis in the lung. A very large proportion of cases of pleurisy are tuberculous, and the early withdrawal of fluid causes vascular turgescence of the lung, often hastens the dissem-

ination of the tubercle bacilli, and kills the patient. Before he began the substitution of one fluid for another by the introduction of air into the pleural cavity he was much more chary of early tapping than he is at present. He now removes the whole of the effusion, even in tuberculosis cases, at an early stage with perfect impunity.

A considerable number of deaths have followed the complete withdrawal of effusion in elderly persons with rigid chest walls. The danger in such cases arises from establishing too great a negative pressure, which leads to hyperemia and edema of both lungs; this can be obviated by the introduction of air. He now recommends the complete withdrawal of the effusion in all cases, but before any great negative pressure is established, and before the patient feels any discomfort, he stops the siphon and introduces about an equal quantity of air to the amount of fluid which he has withdrawn. He then reestablishes the siphon and completes the withdrawal of the effusion. When all the fluid is withdrawn he injects four cubic centimeters of adrenalin solution (1 in 1000) diluted with eight or ten cubic centimeters of sterile normal saline solution, and if he thinks it necessary he introduces more sterile air so as to make the total amount equal to a half or three-fourths of the bulk of the fluid withdrawn. The larger quantity of air is introduced in tuberculous cases. By this method the patient suffers no discomfort except from the slight thrust of the trocar. The author prefers the siphon to the aspirator because the force of the suction can be readily regulated, and as the tube only reaches to a receptacle on the floor practically the negative pressure never exceeds one pound to the square inch; this force is greatly exceeded by the aspirator, and the greater the negative pressure the greater the risk of secondary hyperemia or edema. It is an advantage to introduce a manometer in the air tube, as one can thus avoid producing any positive pressure in the pleura. Of course, all aseptic precautions are taken.

The adrenalin solution is introduced to contract the blood-vessels and to lessen the

secretion. According to Schäfer, Elliott, Brodie, and Dixon, adrenalin only acts on unstriated muscular fiber, which is innervated by the sympathetic; the pleural vessels belong to the systemic system and are thus innervated, but its effect is not very prolonged, consequently one cannot expect it to lessen the secretion for any great length of time if there be much negative pressure in the pleura. Although he had very good success from its use before he commenced the introduction of air, the author soon recognized the limits of its usefulness. When four or five pints of serous fluid are removed from the pleura there is a potential or active cavity left which cannot be filled by a drachm of any fluid. Such a cavity cannot exist in the human body with a surrounding atmospheric pressure of 15 pounds to the square inch. It is filled by (a) the carbonic gas which escapes from the serous fluid; (b) by the more or less expansion of the collapsed lung; (c) by the return of the mediastinal contents which were pushed or drawn to one side, and the further expansion of the other lung; (d) by increased quantity of blood in the chest; (e) by elevation of the diaphragm; and (f) by falling in of the chest wall. All these events may not suffice to fill the cavity if the amount of fluid withdrawn has been very great and the lung so collapsed and bound down that it cannot expand. In this case the negative pressure is very great, and in such circumstances it would be absurd to expect adrenalin or anything else permanently to check the secretion. When the use of adrenalin is supplemented by the introduction of air the negative pressure is lessened or abolished, and the lung gradually expands as the air gets absorbed. By this combined method we can operate early in any case even during the febrile stage, and in no circumstances should the fluid be allowed to accumulate to such an extent as completely to collapse the lung. The author advocates tapping before the patient suffers any respiratory distress. By the removal of the effusion an enormous number of microorganisms are often removed, and by

the introduction of sterile air a light innocuous fluid can be substituted for a heavy and deleterious one. Dr. W. Ewart, of London, has recently been injecting adrenalin solution into the pleural fluid preparatory to drawing it off, and he has had good success in thus stimulating the absorption of the effused fluid.

The author states that he likes to treat the individual rather than his disease; consequently he tries to avoid routine and makes such modifications in treatment as will suit each individual case. When the pleurisy is practically cured there will be found plenty of scope for ingenuity in trying to restore the function of the lung to its pristine vigor. The writer does not take time to enter into the numerous respiratory exercises which he from time to time recommends, but there is one which each experimenter can try on himself—the marked effect of throwing one serratus muscle into and the other out of action.

When there is a large quantity of effused fibrin, such as occurs in pneumococcal pleurisy, decalcifying agents such as lemons, citric acid, and the citrates of ammonium, potassium, and sodium may be used. However, it will be well to reserve the use of these drugs until the acute stage of the accompanying pneumonia has passed, as the lime salts are exceedingly useful in that disease. In order to hasten the solution and absorption of the effused fibrin the author sees no objection to the introduction of trypsin into the pleural cavity. He is engaged with investigations with reference to the limitation or prevention of pleural adhesions. With this object in view he is at present injecting into the pleural sac liquid paraffin which has a lower specific gravity but a higher surface tension than the normal lubricating fluid.

SELECTION OF ANESTHETICS IN OPERATIONS ON THE THYROID.

DELORE and CHALIER (*Revue de Chirurgie*, No. 10, 1907) publish some clinical details, together with the results of treatment, in 73 cases of benign swelling of the

thyroid, on which they have operated in the course of the last seven years in the clinic of Professor Poncet. In the section of their paper which deals with the operative and postoperative complications in cases of this kind the authors discuss the question of general anesthesia, which in the opinion of some authorities cannot be employed in thyroid surgery without danger. Two questions are considered: Is it imperative for the surgeon to operate without anesthesia? and if not, should he use ether or chloroform? Ether, it is pointed out, has been accused of causing, when employed in operations for goitre, various respiratory disturbances, from simple tracheobronchial irritation to vascular and pulmonary congestions, and to postoperative bronchopneumonia. The ordinary dangers of chloroform, on the other hand, are held by many to be exaggerated by the risk of cardiac syncope, a special predisposition to which exists in the case of a tumor compressing the trachea and, it may be, the pneumogastric nerves. Some surgeons reject both ether and chloroform, and in all their cases rely systematically on local anesthesia by cocaine. The authors hold that on this subject a general rule cannot be laid down. General anesthesia, in their opinion, is subject to just the same indications and contraindications in thyroidectomy for goitre as in other operations. Though the surgeon may be obliged to replace it by local anesthesia in debilitated and cachectic subjects, or in urgent cases complicated by serious respiratory and cardiac complications, it ought to be employed in most of the operations for goitre. Ether is always used and has been found free from danger by Poncet, who asserts that postoperative pneumonia and bronchopneumonia are due as a rule not to the action of ether, but to infection. It is necessary, however, for the anesthetist when dealing with a goitrous patient to be very careful, and to endeavor not to put his subject deeply under the influence of the agent, and also not to begin its administration before the surgeon is ready to intervene. The usually prolonged period before ether has taken any decided effect on the

patient may be shortened by the use of ethyl chloride, which acts very rapidly, and usually suppresses the initial phase of congestion and excitement. This mixed procedure of anesthesia, the authors state, was practiced in nearly all their cases, and always, except in some instances of threatened asphyxia, without any serious incident.—*British Medical Journal*, Nov. 9, 1907.

EMPHYEMA.

In regard to the treatment of empyema SIR JAMES BARR has this to say in the *Lancet* of November 9, 1907:

This is one of those numerous diseases which the surgeons have taken under their own special care, but they have done nothing to advance its treatment, the author presumes because physics seems to have formed no part of their education. In the case of a child with elastic chest walls one could not easily mismanage a case of empyema. A considerable number of cases get well in spite of treatment. When a surgeon has to deal with a purulent effusion in the chest about the only idea which he can get into his head is free drainage, and forthwith out comes a piece of rib and in goes a larger drainage-tube, expecting it to suck up the liquid from the most to perhaps the least dependent part of the cavity, and utterly reckless as to whether the collapsed lung ever expands again or not. Dr. Otto F. F. Grünbaum has devised a useful appliance for assisting the lung to expand in these mismanaged cases, but the writer does not know of any surgeon who has taken it up.

Mr. Arthur Edmunds, to whose valuable work the author has previously referred, insists on the anesthesia being very light when operating on an empyema, so as not to abolish the pleurolaryngeal reflex, and thus the vocal cords are enabled to play their part in maintaining the pressure within the lungs. If the author had to deal with such a case as a surgeon he states he would use a local anesthetic, such as eucaine; or if thought necessary in any particular case, light general anesthesia as recommended by

Mr. Edmunds. The writer states he would make a free incision in a very dependent spot, about the eighth or ninth intercostal space, in a line with the lower angle of the scapula. If the ribs were close together it would be well to take out a long piece of one rib and then make a free incision into the pleura. An assistant should firmly compress the side so as to drive the purulent matter out and allow as little air as possible to enter the chest during the operation. A strip of gauze may be inserted in the wound to keep it open, but no tube should be introduced. Then apply a large piece of sterile oiled silk over the wound to act as a valve, so as to allow the fluid to escape and no air to enter. Large aseptic dressings should be applied over the valve. The affected side may be well strapped to prevent movement. Then the patient should be made to lie on or toward the affected side, so as to lessen movement and encourage drainage; prevent him from taking any deep inspirations, and tell him to make deep nasal expirations, so as to expand the affected lung and drive the purulent matter out of the pleural cavity. He should be instructed to inspire through the mouth and to expire through the nose. He should also be made to practice the Valsalva method or blow through a small tube. If the pus be very offensive or not draining well the patient can be treated in a continuous bath, and then no dressings will be required.

In these cases the pus is usually fairly liquid, is neutral or may even be slightly acid in reaction, contains some peptone and a ferment which seems to have the power of digesting fibrin, and thus the lung is not likely to be irreparably collapsed or bound down by adhesions; there is, therefore, a fair chance of success if the operation be adopted early, and after-treatment intelligently carried out. The variety of microorganisms in the pus should be ascertained, and an appropriate vaccine, after the method of Sir A. E. Wright, should be used. Even the stinking empyemata from the bacillus coli often do very well. Tuberculous cases are the most troublesome, and usually when the fluid becomes purulent

there is a mixed infection. Cases of pyopneumothorax are best treated by drawing off the fluid and filling the cavity with sterile air or oxygen. Where the empyema is loculated the surgeon may remove a piece of the rib if he chooses; he cannot do much harm. Unfortunately, Estlander's operation is often necessary, partly owing to early mismanagement of the cases. There must be some effort made to place the treatment of this disease on a more scientific basis than that on which it at present stands.

STATUS EPILEPTICUS AND ITS TREATMENT.

RAFFLE in the *Journal of Mental Science* for January, 1908, in an extensive article on this subject says that although the mild cases recover, nearly all the untreated severe cases die. The mortality in the author's cases—under all forms of treatment—was 44 per cent. The percentage of deaths given by various authors is: Burney Yeo, 50 per cent; Nothnagel and Buisanger, 50 per cent; Lorenz (less than) 45 per cent; Clarke (out of 52 cases), 33 1/3 per cent.

Under treatment by hyoscine hydrobromide, out of seventeen cases attacked there were fifteen recoveries and two deaths.

The earlier the case comes under treatment the more favorable seems to be the chance of recovery.

With regard to the treatment of the condition there is no greater evidence of the difficulty met with in dealing with it than the number of remedies which have been recommended for its cure. Chloral is the drug which seems to have given the best all-round results, either with potassium bromide or without it. On the other hand, chloral has failed utterly in the writer's cases, and this has also been the experience of others, amongst whom may be mentioned Dr. Bevan Lewis and Dr. White. Citrate of ergotin (1/200 to 1/50) hypodermically, digitalis, amyl nitrite, and a host of other drugs have all been useful in cases or groups of cases; all have been—with the exception of chloral—eventually discarded.

The most successful treatment in the author's cases has been that with hyoscine hydrobromide. With regard to the usefulness and method of action of this drug there has been a great deal of discussion. As to the points raised, most have been, and will be, dealt with in other places, but an epitome of the action of the drug itself must preface the remarks as to its use.

"The dominant physiological action of hyoscine is upon the cerebral cortex, producing sleep often accompanied by a low delirium. It is also a centric depressant of respiration, and depresses, though somewhat feebly, the whole motor cord. . . . Its influence upon the circulation is very slight, and it appears to exert no influence on the nerves or muscles."

Wood also points out that the experiments with hyoscine must have been made with different alkaloids or combinations of alkaloids. He insists most strongly on the point that hyoscine has little effect upon the heart: "It has no sedative influence upon the heart; it may be used when the feeble condition of that viscus forbids chloral," and points out that the only depressing effect is upon the respiratory center. In view of the fact that Mott has conclusively proved that the tendency in status epilepticus is death from cardiac failure and not from asphyxia, one of the grave objections to the use of hyoscine—that it tends to increase cardiac failure—is proved a fallacy. Moreover, there are two other points with regard to this: First, their experience with the drug has not shown any indication that it acts as has been asserted; secondly, the author has used the drug in cases in which senile changes had already made the heart feeble.

Another point of great importance with regard to this statement is the nature of the hyoscine used. The author points out Wood's contention that the drug, as used, was not always of the same composition, and this is borne out by the following data: First, after a succession of recoveries extending over some years he had two fatal cases. Both these cases were no more severe at the onset than the ones cured,

both were treated immediately on onset, and both were treated with the same specimen of the drug, which was a new one. Secondly, Hobart Amory Hare and others have drawn attention to the fact that people differ greatly in reacting to the drug. Is there more idiosyncrasy or variation in efficiency in this phenomenon? Thirdly, hyoscine hydrobromide in the form of pellets standardized ready for use seems useless; of this the author has satisfied himself by investigation of cases in several asylums in which it has been used extensively. The small dose necessary requires very careful preparation of stock solutions.

The drug, as prepared by Merck, has been used in all the author's cases, and he finds now that the same variety of the drug was used by Wood in his experiments.

The routine treatment is as follows: The solid hyoscine hydrobromide is procured from the source spoken of and a carefully prepared solution is made (1 in 400—i.e., 1/100 grain is contained in 4 minims), a small amount of a preservative being added. On the onset of the "status" 4 minims is given by hypodermic injection; half an hour is allowed to elapse, and if the symptoms show no signs of amelioration another 2 or 4 minims is given; the following morning an enema is given. This treatment has been used upon every occasion during the past six years and has seldom failed.

THE PRESENT POSITION OF X-RAY THERAPEUTICS.

In *Folia Therapeutica* for October, 1907, FINZI gives us a summary of this subject. X-rays have been employed in the treatment of a large variety of conditions. They have given excellent results in some of these; in others they are useful as an alternative treatment; in others again they are valuable as an accessory to some other therapeutic agent; and, lastly, they are a means of ameliorating and even curing certain hitherto incurable diseases where all other treatment has failed to benefit.

Their action may be considered under five heads:

1. They cause a reaction which can be graduated and controlled by careful dosage, and which is generally painless when not carried too far. This reaction is peculiar in that it does not appear for some days after the application, is most marked in the skin, and is very persistent. It is probably this effect which causes the destruction of microorganisms in the tissues, as it, of course, occasions a leucocytosis, whereas the x-rays have no effect on microorganisms in cultures, at any rate in the doses which can be applied to human beings.

2. They alter metabolism in the skin and superficial tissues, and cause the absorption of pathological deposits of fibrous tissue.

3. They cause absorption of certain pathological formations and neoplasms. Actual disappearance of the cells in these cases without any apparent reaction has been observed.

4. They cause the hair to fall out, and, in larger doses, cause atrophy of all the appendages of the skin, and even of the skin itself.

5. They act as an anodyne in painful and pruriginous affections.

The quantity, quality, and method of application of the x-rays in each case are subjects too large to discuss here, but both quantity and quality should be measured.

The therapeutics will be considered under the above-mentioned five modes of action, as one of these usually predominates in any particular disease.

1. Probably the most important cases coming under this head are lupus and superficial tuberculosis.

Excellent results are obtained in lupus, and the cosmetic effect is usually very good, though in some cases small telangiectases are produced. The Finsen light and its modifications do not produce these telangiectases, and therefore more constantly give good cosmetic results, but the application is slower in its action, and consequently more exposures are required; occasionally, Finsen light treatment fails altogether, and x-rays succeed in the same case.

Superficial tubercular ulcers are even more amenable to x-rays than lupus. Finzi

has also seen remarkable improvement in some cases of suppurating tubercular bone disease (*morbus coxæ*, etc.) exposed to the rays.

Simple chronic ulcers are much benefited, but in ulcer of the leg suitable support and general treatment must be employed as well.

In many skin diseases the x -rays are of value, but are generally too expensive to use unless other methods fail. Eczema is the most important, but x -rays have also been found useful in lupus erythematosus, psoriasis, lichen planus, acne vulgaris, acne rosacea, and alopecia areata. Amelioration and improvement are sometimes seen in lepra. Trachoma has also been treated with success.

2. Very great benefit is seen in some cases of contracted scars, such as those caused by burns, injuries, and certain operations. The fibrous tissue becomes absorbed, the appearance is often much improved, and the secondary effects of contraction of the scar (*e.g.*, edema) to a large extent disappear. An analogous result is obtained in scleroderma and morphea.

Excellent results have been reported in ichthyosis and elephantiasis.

In the whole of this class older methods of treatment have been very satisfactory.

3. Taking first of all benign formations, those in which the x -rays are most useful are keloid and warts. The results in these cases are very successful and constant, and the first is uninfluenced by any except surgical methods of treatment, which are unsatisfactory.

In xanthoma good results are sometimes obtained.

With regard to malignant growths, there is one in particular, viz., rodent ulcer, in which x -rays have established for themselves a position from which they will not easily be displaced. In this disease the results are very good even in advanced cases. Treatment of rodent ulcer by driving in zinc ions is giving results which seem to be more rapid, but it is still on its trial.

Other forms of malignant disease are seldom treated in an early stage; nevertheless, some cures of slowly growing neo-

plasms are reported, and malignant ulcers will almost always heal over even if the underlying growth is not absorbed. There is no evidence that x -rays can prevent general dissemination of malignant disease. One would not, in the present state of our knowledge, be justified in advising the treatment while an operation is possible. X -rays should be tried, however, in every inoperable case, as they have cured some, improved others, while the pain is usually much lessened. Cases have been treated with x -rays after operation to prevent recurrence: statistics on the value of this are not obtainable; at any rate, it has a beneficial effect on the scar, and does no harm.

Mycosis fungoides, a disease hitherto not amenable to any other form of treatment, and universally fatal, yields to the x -rays. On account of its rarity few cases have been treated, but most of these have been cured.

Lymphadenoma has been treated with benefit.

The results obtained in leukemia, both in the lymphatic and the splenomedullary forms, have been little less than wonderful. After all other treatment had failed, in some cases marked improvement was seen, with possibly some cures.

4. By giving a certain dose of x -rays, epilation can be secured without permanent alopecia. The most valuable application of this is in ringworm; the fungus is not destroyed, but comes out with the hair, and if it is prevented from infecting the rest of the head a complete cure will result in a much shorter time than was formerly possible. In children under two or three years, however, other methods of treatment are more rapid.

Similarly, excellent results are obtained in favus, blepharitis, sycosis, and folliculitis, but here the effect of the rays on organisms in the tissues also plays a part.

In hypertrichosis the method is excellent if temporary epilation only is aimed at, and this can be repeated every six or seven weeks and will in the end result in permanent alopecia. If excessive doses are given, pigmentation or scarring may be produced.

5. In cases of neuralgia the trouble has been relieved when it is not of central origin.

In prurigo, pruritus ani, and pruritus vulvæ the treatment is very successful.

Good effects have been reported in epilepsy after exposing the head to x -rays, the frequency and violence of the fits being diminished.

The author makes no claim to having exhausted all the uses to which x -rays have been put, but has briefly indicated the conditions in which their effect is most marked and the limitations of their usefulness in these conditions.

ON SOME USES OF PEROXIDE OF HYDROGEN IN THE DISEASES OF THE EAR, NOSE, AND THROAT.

LAMB in *Folia Therapeutica* for October, 1907, states that in subacute and chronic suppuration of the middle ear peroxide of hydrogen is a very useful application. It acts as a disinfectant and deodorant, and to some extent also as an astringent; and the active effervescence which occurs when it comes in contact with blood or pus exerts a mechanical action which helps in the breaking up of masses of septic material, and the detaching of epidermal scales. It cleanses a septic ear better than any preparation with which the writer is acquainted, and he has never observed any signs of irritation from the use of the ten-volume strength when a pure preparation was used.

When discharge from the ear is profuse, it is well first to wash away the pus with a syringeful of warm lotion—boiled water answers as well as anything else—and the meatus is then filled with peroxide of hydrogen solution (cold); the patient holding the head well over to one side so that the liquid does not run out again. An active effervescence takes place, and this should be allowed to go on till it ceases, or at least for several minutes; a little fresh peroxide being added from time to time. The froth and débris are then syringed out of the meatus, and the parts are dried and dressed as desired. For instance, in cases with con-

siderable destruction of the drumhead and good drainage, the meatus may be dried with pledgets of absorbent cotton, and then filled with powdered boracic acid; or if granulation tissue be much in evidence, with perhaps a smallish perforation and imperfect drainage, drops containing alcohol (25 to 100 per cent) may be instilled; or, again, if the skin of the meatus be eczematous, the passage may be lightly packed with sterile gauze soaked in Burrow's solution or in a mixture of lead and spirit lotions (equal parts). Pure cerumen is not much affected by peroxide of hydrogen, but plugs of epidermal and mixed nature are generally rapidly softened by it, and rendered easy of removal by the syringe.

In perforating mastoid operations the writer has found the peroxide of use in cleansing foul cavities, and, in addition to this, it has quite a noticeable effect in checking the profuse oozing from small vessels, which is sometimes so troublesome during such operations. The mopping of the wound is done with narrow strips of sterilized lint, firmly packed into the recesses of the cavity; and from time to time these strips may be soaked in peroxide of hydrogen as fresh areas are exposed and oozing becomes more profuse.

In removing gauze packing from cavities in the temporal bone—as after mastoid operations—it is a good plan to moisten the gauze, length by length, with peroxide of hydrogen before withdrawing it. The effervescence loosens the packing, and the dressing is accomplished with much less pain than is ordinarily the case. This is especially true of the first dressing after the radical operation, but it applies to all cases in which gauze packing is used. The treatment with peroxide of hydrogen and spirit drops, as described above for cases of chronic otorrhea, answers very well in combination with packing, after the radical mastoid operation.

In disease of the nose the uses of peroxide of hydrogen are chiefly two: (1) For the disinfection and removal of purulent discharges, especially when these are crusted and adherent to the mucous membrane, as

in ozena and some cases of sinus suppuration. (2) For the checking of hemorrhage. The peroxide is best applied on pledgets of absorbent cotton, which are placed accurately in position under the guidance of the forehead mirror.

Crusts are very quickly softened, and can then be easily detached and removed with the nasal forceps; or they may be washed away by a stream of warm normal saline injected from a Higginson's syringe. The nozzle of the syringe should be protected by a piece of rubber tubing, or still better, by a conical rubber tube. The nozzle should be introduced into the narrower of the two nostrils, and the patient should hold his head forward over a basin and breathe quickly in and out through the mouth.

For the prevention of bleeding the peroxide is applied in exactly the same way—*i.e.*, a loaded pledget of cotton-wool is pressed against the bleeding surface and left in position for as long as may be considered necessary.

In operations for the removal of polypi an application of a few minutes will usually suffice to check the bleeding sufficiently to enable the operator to see the field of operation, and this application may be repeated several times during a sitting. When the head of the middle turbinal is removed, as often happens in operations for polypi, and also for nasal suppuration, the little artery which runs along the free border of the turbinal is necessarily divided in two places, and as it sometimes runs in a deep groove in the bone it retracts with difficulty, and may give rise to troublesome reactionary hemorrhage after the effect of the cocaine and adrenalin has passed off. Such bleeding may be readily controlled by packing a pledget of absorbent cotton soaked in peroxide of hydrogen upward and backward against the cut surface of the turbinate, which of course looks downward and forward toward the anterior nares. If a silk thread be attached to the compress it can be removed later by the patient according to the surgeon's directions.

In case of submucous resection of the

septum after removal of the packing, peroxide of hydrogen may sometimes be applied with advantage to the interior of the naris, either by dropping it in with a pipette, or, as the writer prefers, by spraying it in with a suitable instrument, such as Parke-Davis's glaseptic nebulizer. The same treatment may be usefully employed at times after other operations, such as tubinectomy. When much reactionary disturbance follows the use of the galvanocautery, peroxide of hydrogen is an excellent application for the surface of the wound. A little cocaine should be sprayed on first, and the wound can then be soaked with peroxide, cleansed, and dressed without pain, and to the patient's great comfort.

In the majority of cases of epistaxis the "bleeding spot" on the septum can be efficiently compressed by a pledget of wool loaded with peroxide introduced just beyond the vestibule and pressed against the septum by the tip of the finger applied outside the ala. If this pressure be maintained for ten or fifteen minutes the bleeding will generally be stayed.

In ulcerations of the throat, whether septic, specific, or malignant, peroxide of hydrogen is a useful cleansing agent, and it is best applied on a loose mop of absorbent cotton, with which it can be gently sopped on to the ulcerated surface. The same method is suitable for cases of lacunar tonsillitis, in which the mouths of the crypts are choked with masses of purulent exudation.

For the various purposes mentioned above the writer has been in the habit of using the ten-volume strength, and when fresh and pure has found it to act satisfactorily; of late, however, he has frequently employed a very much stronger preparation (perhydrol undiluted), dabbing it lightly with a cotton brush on to foul and suppurating surfaces, and when applied carefully in this way he has seen no signs of injurious irritation—nothing more, in fact, than the transient tingling which follows the application of this extremely active liquid to the skin.

THE TREATMENT OF MUCUS IN THE STOOLS, ASSOCIATED WITH INTESTINAL FLUX.

CANTLIE has this to say of the treatment of intestinal flux when due to stricture of the sigmorectal pylorus in the *British Medical Journal* of November 9, 1907:

1. In all cases examine the bowel per rectum by the sigmoidoscope.

2. Attempt to gauge the caliber of the aperture of the sigmorectal pylorus by soft tubes.

3. When there is no evidence of malignancy, treat the stricture of the bowel as one treats a strictured urethra, namely, by the passage at intervals of bougies (esophageal tubes suit well) of gradually increasing caliber.

The author repeats that attempts to pass tubes through the sigmoid flexure even in health for the purpose of washing out the bowel, etc., can be rarely carried out, although it is constantly being attempted and believed to be accomplished; when the bowel is narrowed from congestion or congestive stricture of the sigmorectal pylorus, it is impossible to pass anything through without the help of the sigmoidoscope. By the passage of bougies of increasing size through the sigmoid flexure it will be found that the pain, which at first is usually sharp, gradually lessens, that the diarrhea and mucus disappear, and a healthy bowel results.

THE USE OF CHRYSAROBIN IN PSORIASIS.

The *Scottish Medical and Surgical Journal* for April, 1908, contains excellent illustrations and directions by WALKER on the diagnosis and treatment of psoriasis. He reminds us that Pautrier, in discussing the chrysarobin treatment, uses the phrase, "Pas d'erytheme, pas de guerison." With his meaning the author entirely agrees, but does not think it is sufficiently understood that the erythema which is aimed at is not that of the intervening areas of healthy skin, on which it is quite easy to produce the redness, but that of those areas which are

the seats of psoriasis. At this stage thorough inspection of the patient is made, and those spots which are lagging behind the others must be subjected to yet more energetic treatment to bring them into line with the others. The experience of the author does not accord with that of those who maintain that chrysarobin applied to one part of the body will cause the disappearance of lesions on other parts of the body to which it has not been applied. He is ready to concede that if one leg is rubbed with chrysarobin ointment and the other left alone, that other will in a day or two show some of the effects. These are due to the indirect application of the drug, either by rubbing one leg against the other, or still more indirectly through the bed-clothes. Very often, in spite of attention, one or two lesions, especially on those areas to which it is more difficult to apply dressings, are found persisting, when the patient has a right to expect that the treatment is concluded, and therefore the inspection at this stage, when the defect may still be remedied, is all-important.

These lagging spots must be treated by an ointment in which other drugs are brought to the aid of the chrysarobin. Five per cent of salicylic acid is a useful addition, so is tar. As already indicated, the author has not found alkalies very useful additions to chrysarobin; and he believes that Drew's ointment, which is often useful at this stage, though especially so for those cases in which the lesions are few in number, owes its easily demonstrated efficiency to its other ingredients, and its strength. It is as follows:

℞ Chrysarobin,
Ol. rusci, āā 20 parts;
Acidi salicyl., 10 parts;
Saponis viridis,
Vaselini, āā 25 parts.

One of these reënforced ointments is applied to the laggard spots, and to the rest of the body the treatment is continued as before until the erythema appears on the affected areas. This will be in from eight to eleven days from the commencement of the treatment. As the common error is too

early arrest of the treatment, it is not a bad plan to allow the patient to rest in his dirty dressings for a day or two more. He will not be comfortable, but the fact that no fresh treatment is being carried out may be made judicious use of and the discomfort explained away. Eventually one, or better, two, warm baths in succession are taken, and the patient should be found on examination free from his disease.

Sometimes the cure is permanent, more often it has to be repeated, but as a rule it is followed by a period of freedom, often so long that the patient considers his fortnight's incarceration well-spent time.

The author has not dealt with the subject of psoriasis of the scalp. Those who are familiar with his views know that it is to the treatment of that region that he attaches most importance in the successful treatment of psoriasis. Unfortunately the inconvenience attached to the use of chrysarobin in this region renders it, as a rule, an undesirable application. No ordinary means of application will prevent some of the drug reaching the face and producing the inevitable erythema and conjunctivitis. But if it is thought necessary to use chrysarobin in this situation it can be done. Unna's method of applying, with the aid of zinc gelatin, a barrier of gutta-percha tissue between the forehead and the scalp may be adopted, or the scalp may be shaved, and Hodara's formula of chrysarobin 3j, chloroform meth. and glycerin, of each 3ss, may be applied. This does not "run" as do ointments, and after its application the region treated may be covered with cotton-wool and carefully bandaged.

But, as a rule, other methods are preferable, and it is to the efficient use of the drug in psoriasis of the body that the above remarks are especially devoted.

SLEEP AND SLEEPLESSNESS.

In an article on this topic in the *Lancet* of February 8, 1908, MORRISON asserts that many as have been the hypnotics introduced into practice during recent years, when physical pain or disorders of visceral motion

and sensibility are the active causes of insomnia, none of these has an efficacy in any way comparable to that of those oldest of hypnotics, opium and its derivatives. No agents, however, are more apt to induce the drug habit. Prescribed in the first instance for sufficient reasons, and in quite a legitimate manner, they frequently continue to be used by the patient, openly or surreptitiously, after the need for their employment has gone. Their use, therefore, has to be constantly guarded from abuse.

In the absence of physical pain and visceral commotion or discomfort the majority of reliable hypnotics in use belong to the methane series, of which alcohol, chloroform, paraldehyde, sulphonal, trional, veronal, chloral, and chloralamide may be mentioned as examples. Why this group should have a special action in abolishing consciousness is not quite clear, notwithstanding some ingenious suggestions as to their *modus operandi*. Cushny refers to the hypothesis of Meyer and Overton, according to whom their special solubility in lecithin and cholesterin, in which brain cells abound, is a possible cause of this specific action. But, as Cushny points out, there are other substances resembling these in this particular of solubility which have no such narcotic effect. One would *a priori* expect that if this special solubility led to a more intimate incorporation of these substances with the brain cells their effect upon the latter would be more lasting than experience teaches to be the case.

Thus the chloral habit, or even the habit acquired of taking that most disagreeable hypnotic, paraldehyde, may exist for many years without apparently disabling the brain cells from doing much active mental work. But again, one meets with cases in which the drug habit appears to incapacitate its victims altogether for continuous mental application. These differences are not easy to explain merely as effects of the drug. There is evidently a personal factor involved, a personality which is a synonym for character, moral and probably also physical. The intelligent and industrious who dread the effects of insomnia may, like

him who eats to work, take hypnotics to work. Others, like those who live to eat and who also live to sleep and to indulge in anything else that is pleasant, take hypnotics to squander in sleep the time they are too selfish or too inert or too ignorant to employ profitably when awake. But sleep is necessary for all; like rain it falls upon the just and upon the unjust, and, injurious as are the effects of the abuse of hypnotics in many cases, their actual destructive power is less than that of a continuous or persistent insomnia, however caused. Regrettable as is the acquisition of the sleep-drug habit, there are cases therefore in which, as the lesser of two evils, the use of hypnotics for a considerable period seems unavoidable.

With one or other member of the methane group bromides may be prescribed, alone, or with the addition of a derivative of hyoscyamus or cannabis indica. The well-known effect of the hyoscyamus group upon the peripheral motor nerve-endings tends to quiet muscular unrest and helps to induce that quietude of the extremities which favors the advent of sleep. Hyoscine itself is too powerful a drug for habitual use, but in the violent excitement of the insane may be invaluable as a muscular quietant. The author has not infrequently found the use of the bromides during the day and a separate dose of one of the methane hypnotics at bedtime an effectual means of removing the consequences of insomnia.

GRAVES'S DISEASE AND ITS TREATMENT.

In the *American Journal of the Medical Sciences* for March, 1908, THOMSON says in connection with the therapy of Graves's disease that a complete thyroidectomy would be the only recourse if the usual explanation of the benefits of the operation was valid. Instead, at present only partial resections are recommended. The part of thyroid left, no matter how diseased, then becomes normal, as does the patient also. This surgical fact has no parallel elsewhere, certainly not in the infections or degenera-

tions dealt with by surgeons. Neither a tuberculous gland nor a patch of gangrene can be left to get well because it has been half cut out. A cure of such a serious toxemia as that of Graves's disease by removing a portion only of the thyroid gland is beyond all present explanation, and can be accepted merely as an empirical fact.

But it is also a fact that Graves's disease, whatever its stage or degree, can be equally benefited or cured by proper medical treatment alone. Failure then is due to difficulty in managing the patient and not to the disease. Many women seem incapable of that perseverance in observing the regimen and continuing the medication for the prolonged time that is essential to control a malady which is like diabetes in its requirements for both abstinence and observance. One of the important objects is to enjoin rest from muscular exercise, to secure which the physician should explain to the patient that muscular debility is a specific accompaniment of the affection as much as in fever, and no transient condition which will-power can overcome. But likewise all fatigue is to be avoided; it is striking how soon certain nervous symptoms, such as headache and insomnia, follow upon both undue muscular and mental exertion in these patients.

On the matter of diet the directions cannot be too positive and too detailed. Butcher meat is never to be allowed. Fish, if not too oily, as salmon or smelts, seems much less objectionable than meat. Oysters, clams, and lobsters are forbidden. Poultry can be taken sparingly, but not at night. Not more than one egg a day, best taken at breakfast, is allowable. Of game the author only allows quail and partridge, but no dark meat birds.

The standard article, however, is milk, which alone will cure many severe cases of Graves's disease if it be taken as the Bedouins and Tartars of Asia take it, as well-nigh their only food. A Bedouin would no more drink fresh milk than we would eat a raw potato. He always ferments it first, with yeast as the ferment. Most Tartars use the plant kefir as their ferment.

Peptonized milk will answer if the patient does not know how to make the fermented milk. Raw milk, on the other hand, is wholly indigestible in the quantities which should be taken in this disease, and if ever taken should be half diluted with Vichy or with lime-water.

Next to living on milk the patient should be a vegetarian, for vegetable albumen rarely disagrees. Bread, particularly if crusty, and rice can be taken *ad libitum*, but hot soda biscuits are nearly poisonous, and starchy crackers are to be avoided in persons much troubled with headaches. Of vegetables, beans (except string-beans) and peas are wholly inadmissible. The author would rule out also asparagus, and, to a less degree, spinach. Of the cereals oatmeal is forbidden, but the others in common use, particularly hominy, are recommended, as they are so often taken with milk and cream. Nearly all the fruits are beneficial except uncooked apples and strawberries. Of course in a disease so marked with digestive disturbances, individual idiosyncrasies will have to be respected.

Medicinal treatment holds a high place in the estimation of the author. To every patient he recommends 30 grains of the phosphate of sodium taken at the beginning of each meal. A blue pill or other mercurial laxative taken twice a week is a routine prescription. Then a course of intestinal antiseptics is kept up for months at a time. He usually begins with sodium salicylate and sodium benzoate, of each 10 grains, an hour after each meal. At bedtime he gives a capsule containing naphthalene 3 grains and sodium benzoate 6 grains. After a time he substitutes a capsule containing phenol bismuth and ammonium benzoate, each 5 grains, of which two should be taken an hour after meals. The principle of these remedies as intestinal antiseptics being understood, every physician can vary the prescriptions as he finds best.

No patient with confirmed Graves's disease should be promised a speedy cure. The author states he once thought that two years' absence of all its symptoms might allow the hope that it would not return,

but he does not now, because his experience makes him dread a case of relapse after a long interval of freedom more than he does any other instance of disease. In his paper the author mentions patients who once severely affected with Graves's disease apparently remained entirely well for periods varying from three to seven years. They then relapsed, and none of the remedial measures which before were so effective were of any avail, four out of the five dying on his hands. This result is not without its analogy in diabetics, for if a diabetic once indulges in starches his glycosuria then increases often for weeks after his indiscretion, though he may have quickly returned to his old observance of rules of abstinence. One of the patients mentioned above with a late relapse had returned to a meat diet.

THE VALUE OF AN ABSOLUTELY VEGETARIAN DIET IN PSORIASIS.

BULKLEY, in the *Journal of the American Medical Association* of February 22, 1908, tells us that of late years he has made the diet much more strict, excluding entirely all animal food, even strong soups, poultry, eggs, and fish; and he has had a number of patients for years on an absolutely vegetarian diet, only allowing butter, but not milk as a beverage, and in some cases he has excluded tea and coffee.

The effect of this cutting off the supply of animal nitrogenous food has been very remarkable and striking in many instances (a considerable amount of nitrogen is still supplied by certain vegetables, as the legumes and oatmeal). Patients continually notice the change in the color and character of the eruption, it paling and becoming less scaly, and even entirely disappearing in some weeks, with absolutely no local treatment.

In a number of instances this diet has been given to patients who had long been under the care of the author, even for years previously, and the patients and himself have been well able to judge of the result of this radical change in the mode of life;

and they have watched with great interest the often rapid improvement in the eruption, under precisely the same treatment as before, except that the author commonly suspends local measures.

This treatment has been given to patients at all periods of life, from nine to seventy-eight years of age, and, as has been stated, has been carried out with varying degrees of fidelity. The note has been repeatedly made that when there has been a neglect of the dietary element there has been a recurrence of the eruption, which again yielded rapidly when stringent measures were enforced.

On the other hand, there have been a number of patients who have faithfully pursued this plan of treatment in whom a long-existing psoriasis has remained absent, and who, having become accustomed to the diet, say that they have lost the desire for animal food and will not touch it again.

This plan of treatment has been tried on some of the author's patients in the New York Skin and Cancer Hospital with evident benefit, but naturally it is very difficult to carry out effectually such a measure for a long time in this class of patients. In one very striking case, however, a young woman aged thirty-three, who had been repeatedly in the hospital with most aggravated psoriasis of many years' duration, the eruption, which covered almost the entire body and assumed a general exfoliative condition, disappeared entirely under an absolutely vegetarian diet and large doses of nitric acid, with no local treatment. She remained afterward many months in the hospital free from eruption, and when she went out she was seen occasionally, still faithful to treatment and free from eruption.

The oldest patient, a man seventy-eight years of age, who had severe psoriasis all his life and had been some years under observation, showed a very remarkable improvement as soon as he was persuaded to follow this diet some five months ago, and old, thickened patches have almost disappeared.

It is not always easy to convince patients

of the value of this treatment, and to persuade them to carry out an absolute vegetarian diet with perfect strictness for a sufficient length of time or permanently; and it will often require no little insistence, as well as intelligent aid, on the part of the physician, in order to effect the result desired. But after an experience with it for twenty years the author knows that it can be effectually accomplished, at least in a certain proportion of intelligent patients in private practice, and he has a number who are really enthusiastic on the subject and have been so for many years. If from careless or necessary causes, as in traveling, visiting, etc., the rules of diet are transgressed and there should be some little return of the eruption, this has yielded to a very strict observance of the dietary restrictions, with other proper treatment, better than occurs with the latter alone.

Little need be said in regard to the general subject of a vegetarian diet, for abundant experience has shown its value under many conditions of health and disease. The opinion seems to be gaining ground both among the medical profession and the laity that far too much meat is eaten by those who can get it; and in London, certainly, the practice of vegetarianism is increasing, as is evidenced by the large number of well-patronized restaurants which make this a specialty; these are also increasing in New York City.

In the author's experience patients have felt remarkably well when this was rightly directed and carried out, and in numerous instances he has found distinct and steady gain in weight in the spare, and loss of weight in the obese, when tested repeatedly on the same scales.

Finally he emphasizes the fact that while an absolutely vegetarian diet is advocated in psoriasis, he believes that it has its limitations, and must be directed with care and intelligence; but that in proper cases it can control the eruption and prevent its recurrence he is confident. He also wishes to make clear that patients with this eruption at times will require in addition the most varied treatment, internal and exter-

nal, in order to accomplish the quickest and best results. How internal remedies act cannot yet be fully stated, but in the light of our present study they probably have their action in improving the metabolism of nitrogenous substances.

THE VALUE OF NOVOCAINE AS A LOCAL ANESTHETIC FOR SUBCUTANEOUS USE.

In the *Edinburgh Medical Journal* for February, 1908, STRUTHERS says that there are known a number of drugs, more or less closely allied to one another, which have the power of paralyzing nerve terminals or interrupting the conductivity of nerve trunks so completely that they may be successfully used to induce local anesthesia for operative purposes. The most recently discovered of these is a synthetic product which has been termed novocaine. Various advantages over similar drugs have been claimed for it, and it has in a short time attained great popularity, particularly in Germany, where it was discovered, or perhaps one should say elaborated, by Einhorn, and is now prepared in the laboratories of a well-known chemical firm. During the last few months the author has made use of novocaine clinically for inducing local anesthesia by subcutaneous injection, and as he has found that the claims made for it seem well founded, he thought it might be of interest if he indicated briefly the evidence which his experience has afforded. His remarks are based on some eighty-six cases in which he has used novocaine and carefully noted the results, contrasting them with those obtained from the use of cocaine and eucaine in some hundreds of similar cases. These results have been uniformly good, and although the number of cases may seem small on which to base an opinion, he is inclined to believe that novocaine is at least of equal and probably of greater value as a local anesthetic than cocaine or eucaine for subcutaneous use.

In the first place, he states that the drug is very soluble, and that its solutions are stable and may be repeatedly sterilized by

boiling without in the least losing their power of inducing anesthesia. He has tested this by making up a large quantity of a stock solution and using it over a period of several months, sterilizing it over and over again during that time. The solutions combine well with solutions of adrenalin, and do not in the least interfere with the vasoconstrictor action of the latter.

For subcutaneous use one requires, speaking generally, two solutions of a local anesthetic—first, a relatively weak one for use in quantities up to several ounces, to produce anesthesia by direct infiltration of the field of operation; secondly, a relatively strong one for injecting into or around nerve trunks, such as the ulnar or median nerves, to produce what is termed regional anesthesia in the area supplied by the nerve concerned.

For infiltration anesthesia the author has found that a solution of novocaine in 0.75-per-cent saline solution of the strength of 1:400, plus 1 drop of the ordinary 1:1000 adrenalin solution to every 2 or 3 drachms of solution used, the strength of solution originally recommended by Braun, answers admirably. It corresponds to what may be termed the standard solution for infiltration of 1:1000 cocaine, but has the advantage that it may be used in larger quantities; for while the limit of safety is reached when about 4 ounces of the cocaine solution has been used, at least 6 ounces and probably more of the novocaine solution may be employed for an adult without any risk. In addition to this, it diffuses readily and acts as quickly as the cocaine solution, anesthesia being satisfactory in ten to fifteen minutes after the injection is complete, and for this reason novocaine is to be preferred to eucaine, for the latter may require as much as half an hour to take full effect. The duration of the anesthesia is always more than an hour, often as long as three or four hours. After it has passed off there is often, as with other drugs, a variable amount of burning and smarting pain in the wound, and the author has seen no reason to infer that this is either greater or

less than with cocaine, eucaine, etc. Sloughing of the skin, which occasionally follows the use of local anesthetics, particularly eucaine and stovaine, the writer has never seen, nor has he seen it reported after the use of novocaine.

He has used infiltration anesthesia with novocaine-adrenalin solution of the strength indicated in the following operations: Tracheotomy, skin-grafting, application of actual cautery, plastic operation on eyelid, exploration of sinus for foreign bodies, relief of paraphimosis; removal of testis, varicocele, tunica vaginalis for hydrocele, prepatellar bursa, olecranon bursa, carpal ganglion, fatty tumor, angioma, congenital mole, sebaceous cysts, varicose veins of leg, adenoma of breast, small subcutaneous fibrosarcoma, tubercular ulcers.

The list is, the author thinks, fairly representative of the class of operations which may suitably be done under local anesthesia with success. A number of them have been done several times, and the total has afforded a satisfactory test of the efficacy of novocaine for infiltration anesthesia. Several of them, it may be mentioned, were done in children as young as five and six years of age. In no case was there any sign of toxic symptoms arising from the use of the novocaine-adrenalin solution.

For regional anesthesia a two-per-cent solution of novocaine with 2 drops of 1:1000 chloride solution to each drachm of solution used is necessary when nerves as large as the median at the wrist or the ulnar at the elbow are being dealt with.

For anesthetizing digits by Oberst's method, the two-per-cent solution may be used with perfect safety, but a one-per-cent solution with adrenalin as before has been found quite strong enough to paralyze the relatively small digital nerves.

If a ring of this solution is injected around the base of a finger or toe into the subcutaneous tissue, the entire digit distal to the injection will be found anesthetic in ten minutes. It was formerly the custom to apply a rubber band to the finger to localize the anesthetizing solution. The addition of adrenalin to solutions for inducing local

anesthesia, with the resulting anemia and localization of the anesthetic action, has rendered the application of the rubber band unnecessary, and it is now never used.

The use of a local anesthetic for anesthetizing digits by this method appears to afford perhaps as ready and accurate a method of comparing the relative strength of various drugs clinically as we possess, for the conditions in many cases are almost identical, and a given quantity of any drug can be accurately injected in each case and the effect easily watched and estimated. While a $\frac{1}{2}$ -per-cent cocaine-adrenalin solution is strong enough to anesthetize a digit completely in ten minutes, a one-per-cent novocaine-adrenalin solution is required to insure anesthesia in the same time. While one would, however, hesitate to use more than 4 drachms of a $\frac{1}{2}$ -per-cent cocaine solution, as much as 6 drachms of the one-per-cent novocaine solution may be used without any risk. In point of fact such a quantity of a one-per-cent solution is rarely required.

It will be noted that the doses indicated have not been stated as so many grains or centigrammes of novocaine, but in drachms or ounces of the solutions recommended for use. This has been done in order to emphasize the fact that in stating the safe dose of any local anesthetic the strength of solution used must always be indicated, for a given quantity of novocaine, cocaine, or other drug is much less toxic in a weak than in a strong solution. The actual amount of novocaine suggested as the maximum dose in one-per-cent solution is just over 3 grains, while the amount in the $\frac{1}{4}$ -per-cent solution is over 6 grains.

As regards the use of novocaine for inducing regional anesthesia, the author has used it with success in opening whitlows of all degrees of severity, for the removal of ingrowing toe-nails, of subungual exostosis, for the treatment of hammer-toe by excising the head and part of the shaft of the first phalanx, for amputation of fingers at and distal to the metacarpophalangeal joint, for removing needles and other foreign bodies embedded in the hand or fingers, for the

cleansing and stitching of severe lacerated wounds, etc.

It has proved as satisfactory for regional as for infiltration anesthesia, and in conclusion the author states that he believes the advent of novocaine marks a real though perhaps slight advance in the possibilities attending the use of local anesthesia by subcutaneous injection. It is stable, readily sterilized, unirritating, and efficient as a local anesthetic when combined with adrenalin, and can apparently be used in doses to meet all requirements without any fear of serious toxic symptoms arising.

CHOREA, AND A CONVENIENT AND TRUSTWORTHY METHOD OF EXHIBITING ARSENIC THEREIN.

SHARP states in the *Practitioner* for January, 1908, that, speaking generally, arsenic, in the form of arsenous acid, stops the movements of chorea, but it does so only when administered in doses considerably above the average. Small or average doses, although continued over a long period, fail to stop the movements, or, to put it in another way, slow saturation of the tissues does not "cure" the chorea. For the remedy to be effective, the tissues must be rapidly saturated with it. In proof of this assertion the author cites the following examples: A child of twelve took 900 minims of arsenical solution (about 9 grains or 0.583 gramme of arsenous acid) in two calendar months, or at the rate of 5 minims three times a day, without benefit, while another child, of the same age, was "cured" when she had taken 600 minims (about 6 grains or 0.389 gramme of the acid) within a period of sixteen days, or at the rate of $12\frac{1}{2}$ minims three times a day.

The author's object in the present article is two-fold: (1) To show that the method, usually employed to saturate the tissues, is unsatisfactory and uncertain; and (2) that the dosage of 35, 30, 25, or even 15 minims given to effect this saturation is unnecessarily large.

In illustration of these points: A patient is prescribed an arsenical mixture, and told

to take one-teaspoonful doses the first day, and to increase this by a half or a whole teaspoonful every day, till four- or five-teaspoonful doses have been reached. The arrangement gives rise to considerable confusion in the mind of the educated individual, but what must it produce in the mind of the average person, not to mention the hospital out-patient? After the second day the poor patient has only a hazy notion as to whether it is the "two-spoonful" or the "three-spoonful" day; and the physician has only a vague idea of the amount of arsenic that is being taken, or has been taken. A second, and more serious, disadvantage is that by the time a dose of 15 minims is arrived at the patient may repeatedly vomit both food and medicine, no matter how gradually the arsenic may have been increased. The result of all this is that the remedy is stopped, and confidence is lost. The author has found by experience that as soon as the dose is increased beyond $12\frac{1}{2}$ minims there is danger of the arsenic being rejected. His contention is, then, that it is possible to rapidly saturate the tissues, and so stop the choreic movements, without producing the symptoms of acute poisoning, and by doses very much smaller than those usually prescribed and considered necessary to relieve the chorea.

Method of Application.—Whenever he has under his care a case of chorea of from eight to fifteen years of age, and between these ages one oftenest meets with the affection, he prescribes the following:

Arsenical solution (Fowler's), 240
(or sometimes 300) minims;
Tincture of capsicum, 25 minims;
Liquid extract of licorice, 240 minims;
Chloroform water, 6 fluidounces;
Water to make 12 fluidounces.

Mix. Take one tablespoonful three times a day immediately after meals.

As will be observed, 240 minims represents a dose of 10 and 300 minims a dose of $12\frac{1}{2}$ minims. Since arsenical solution is of the strength of one per cent, each dose of 10 or $12\frac{1}{2}$ minims will represent respectively about 1-10 grain (0.0065 gramme) and $\frac{1}{8}$ grain (0.0081 gramme) of arsenous acid, and, practically speaking, in a week

the patient takes 2.40 or 3 grains (0.156 or 0.194 gramme), according as the prescription has contained 240 or 300 minims.

The quantity in the foregoing prescription is for eight days, or, roughly, a week, and this is useful in out-patient practice, for no case of chorea should be left unseen for a longer period than one week. In private practice it is better, perhaps, to prescribe only half the quantity, namely, 6 ounces. There is a reason for all the adjuncts of the prescription. All vegetable extracts are good vehicles for arsenic: gentian, calumba, and especially cascara, for adults, but for children licorice is the best because it is pleasant. Chloroform and capsicum are anesthetic to the mucous membrane of the stomach, and in addition the chloroform helps to preserve the mixture in warm weather.

When the author sees a patient for the first time, as a rule, he prescribes 10-minim doses, but if at the end of a week he sees no signs of improvement, he increases the dose to 12½ minims. The latter procedure is not often necessary, for distinct improvement is more often than not observed at the end of the first week on a 10-minim dose. It may be laid down, as a good working rule to follow, that if arsenic is going to do good in chorea it will show its beneficial action within the first fortnight. When the remedy is doing good he continues it till the patient can walk along a straight line, and stand on the leg of the affected side with steadiness. This usually represents a period of three or four weeks, or at the outside six weeks.

After-treatment.—After all movement has ceased he likes to keep the patients under observation for three or four weeks, if he can, and meanwhile they take the following:

Sodium bicarbonate, 120 grains;
Tincture of capsicum, 25 minims;
Liquid extract of licorice, 240 minims;
Chloroform water, 6 fluidounces.
Water to make 12 fluidounces.

Mix and dissolve. Take one tablespoonful three times a day immediately after meals.

The author uses this mixture because the

bicarbonate washes the arsenic out of the tissues. The statement may not be scientific, the author says, but he knows the medicine does good, and that is the chief thing.

Quantity of Arsenic Taken.—The last six cases he has had under his care have taken respectively 480, 600, 720, 840, 1440, and 1520 minims of arsenical solution, representing in grains of arsenous acid about 4.80 (0.311 gramme), 6 (0.389 gramme), 7.20 (0.465 gramme), 8.40 (0.541 gramme), 14.40 (0.933 gramme), 15.20 (0.987 gramme).

THE MODERN TREATMENT OF TUBERCULOSIS BY DRUGS.

Under this title RAW, in *Folia Therapeutica* for January, 1908, reminds us that there is no disease which the practitioner is called upon to treat which requires so much resource and ingenuity as tuberculosis. The many and varied symptoms, presented in such protean form, and in many instances causing such acute distress, are often difficult to relieve; and although the British Pharmacopœia has been stretched to its utmost capacity, we have still to admit that few drugs have much influence in checking the progress of tuberculosis. The author is convinced, after an extensive experience in dealing with all forms of tuberculosis, that the treatment of the future will be by means of tuberculin and serum-therapy. For the present, however, until our methods in that direction are more precise, it will be necessary to do all in our power to relieve the suffering of the patient and as far as possible direct him toward recovery, although the process is in many cases a slow and tedious one. As this short paper is only intended to deal with drugs all other methods of treatment must be disregarded.

The motto of Dr. Dettweiler, of Falkenstein, "Im Kleinen grosse," exactly represents the treatment of a tubercular patient, but at this juncture the author can only direct attention to a few of the more prominent remedies. He regards cod-liver oil as one of the most important adjuncts to treatment. It is more readily absorbed than

any other fat or oil, and although some patients never seem to take it easily, yet if given in combination with extract of malt it is well borne. In children the inunction of cod-liver oil over the abdomen is often followed by complete disappearance of the abdominal tubercular symptoms.

As a general routine treatment for loss of appetite, fever, and progressive cachexia, with night-sweats, the writer has always found the following mixture most useful:

R Quininae hydrochloridi, gr. ij;
Calcis hypophosphitis, gr. iv;
Tincturæ nucis vomicæ, m. x;
Tincturæ aurantii, 3ss;
Glycerini, f3j;
Aquæ, q. s. ad f3j.

Misce et fiat dosis. Signe: To be taken half an hour before meals, three times a day.

In the writer's opinion one of the best drugs we possess for the treatment of phthisis is creosote. It seems, even in advanced cases with cavitation, to exert an all-round beneficial influence, such as relieving night-sweats, diarrhea and cough, and improving appetite and digestion. He agrees, however, with Whitla, that in England the doses usually employed are too small, and he has frequently given 20 minims for several months without any bad effect.

Pure beechwood creosote gives the best results, and may be administered in elegant soft capsules containing 5 minims of pure creosote. Keferstein strongly recommends a mixture of 45 minims of creosote, dissolved in 1 ounce of tincture of cinnamon, of which 50 drops may be taken in half a cup of warm milk or a little wine. Hudeod and others strongly recommend the administration of creosote by the rectum, as it removes all difficulties regarding taste, etc.

There are at present many other modifications of creosote treatment in use. Benzozol has an excellent reputation, given in 5- or 10-grain doses, as it loosens expectoration and relieves cough. Carbonate of creosote is also much used, and is preferred by many patients. It is a liquid of syrupy consistency, and is suitable where there is much cough and difficulty in expectoration.

The new remedy which is much used

abroad, and called sirolin, is now being largely used in England. It consists of thiocol (potassium-guaiacol-sulphate), and is quite soluble and very palatable. It is harmless, and as much as 50 or 60 grains may be given daily. For children it is excellent, as it relieves cough and dyspnea, and also promotes expectoration.

The drug, however, which seems to give the most encouraging results in the treatment of phthisis with intestinal ulceration is styracol. It is a guaiacol-cinnamic ester, and has the formula $C_6H_5:CHCO O C_6H_4OCH_3$. It forms a white crystalline powder, is insoluble in cold water, but dissolves in 40 parts of alcohol and in chloroform, and is quite readily soluble in hot olive oil. Styracol seems to generate a large amount of free guaiacol, and also liberates the strongly antiseptic cinnamic acid. The advantages which are claimed for styracol in the treatment of phthisis and abdominal forms of tuberculosis are as follows:

1. It is not toxic, if given in therapeutic doses. It passes through the stomach unchanged, and does not injure the mucous membrane.

2. It is odorless and free from any taste of guaiacol. It is pleasant to take.

3. When it reaches the small intestine it gives off guaiacol, which affects the whole system.

4. It liberates cinnamic acid, which acts as a powerful antiseptic to the intestinal tract. Having used the cinnamate and guaiacol in a large number of tubercular cases, the author thinks it is the best method of giving guaiacol, and where there is secondary ulceration of the intestines with offensive and persistent diarrhea, its action is excellent, in many cases checking the diarrhea at once with rapid disappearance of offensive odor.

In severe cases of hemoptysis good results have often been obtained from adrenalin chloride given by mouth, 15 minims of a 1-in-10,000 dilution every two hours until the bleeding ceased. On the other hand, good results have been had from the inhalation of nitrite of amyl. It is difficult to reconcile the action of these

drugs. Space does not permit mentioning other and equally useful drugs in certain symptoms, and the author has purposely refrained from mentioning the most important drug of all, viz., tuberculin, on the future of which the treatment of tuberculosis will depend.

PAINLESS REMOVAL OF ADENOIDS AND TONSILS.

GRADLE (*Chicago Medical Record*, November, 1907) advocates operating without systemic anesthesia whenever feasible, since he notes that the statistics show a disproportionately large number of deaths when chloroform is used. He states that with proper skill the operation can be done as effectively in the wide-awake child as in the anesthetized subject. Nor in his own practice has he noted any unpleasant sequels of operation. He uses for ordinary adenoid operations no instrument but the guillotine-shaped adenotome of Schuetz of his own modification. This brings out the whole tonsil intact. When the adenoids are extensive the instrument is pressed firmly toward one Rosenmueller fossa, and after its action is reinserted toward the other side. The work is done quicker, with less hemorrhage, and as efficiently as with any other instrument. He abolishes actual pain almost completely by injections of 20-per cent cocaine solution supplemented by adrenalin applied to the pharynx up to its roof. A hypodermic needle 10 Cc. in length is thrust into the posterior wall of the pharynx as high as possible after elevating the soft palate with a blunt hook. More efficient is the injection higher up through the nasal passage if this be not obstructed. After using a cocaine spray a blunt cannula just thick enough to serve as a shield for the hypodermic needle is put through the nasal passage. The long hypodermic needle is thrust through this into the pharyngeal tonsil itself. About ten minutes after a well-carried out injection the patient does not feel the pain of cutting. There is almost complete absence of bleeding at the time, and the subsequent hemor-

rhage is less than after the ordinary procedure.

In operations upon the faucial tonsils narcosis cannot as generally be discarded as in adenotomy. To the submissive the procedure may, however, be rendered absolutely painless. A very fine hypodermic needle attached to a heavier extension is practically not felt. With about ten drops of one per cent or even half per cent of cocaine with adrenalin 1 to 4000 injected all around the periphery of the tonsil complete insensibility to cutting is obtained. Pain is, however, felt when any strong traction is made, especially with the snare. Marked reduction of bleeding facilitates the operation and makes the injection valuable even when general anesthesia has to be employed.

While a guillotine-shaped tonsillotome is the easiest and quickest instrument, it but rarely removes the tonsil thoroughly enough to be satisfactory. It can be more efficiently used, however, after a preliminary separation of the tonsil from the pillars and from its bed by means of scissors. A single pair of long scissors bent on the flat (Prince's or Willis's) answers for most purposes. Sometimes the right and left Emmet uterine scissors are especially convenient. During the dissection not much traction should be employed, as this is painful. After this partial dissection of the tonsil from its upper adhesions, it can often be snipped off to good advantage by means of the tonsillotome. There is no disadvantage in leaving the extreme lower portion of the tonsils, as this contains no crypts and is never the starting-point of inflammation. If the partially dissected tonsil is too small to be grasped by the tonsillotome, it can be entirely removed by means of scissors or the hot snare. Unless the tonsillar tissue is very soft, the cold snare is apt to cause pain.

In dealing with small, flat tonsils, that require removal on account of the irritation which they cause, Gradle has found it convenient to put a blunt hook into each crypt successively and snip off with scissors external to the hook. With this class of

tonsils, as well as with remnants after an incomplete extirpation with the guillotine, one can work to good advantage and painlessly with a punch.

When anesthesia cannot be avoided, the operation is aided by the influence upon the blood-vessels of a preliminary injection of cocaine and adrenalin. It is the writer's custom to loosen the tonsils from the pillars and the supratonsillar fossa by means of scissors, and then shell out as much as possible of the gland with the disinfected finger, finishing the amputation with a cold snare.

HYPERPLASTIC TUBERCULOSIS OF THE CECUM.

NASH (*Lancet*, Oct. 5, 1907) reports two cases of this condition, each exhibiting the well-known difficulty of making a distinction clinically between tuberculosis and cancer. The age of occurrence is perhaps the most characteristic feature of tuberculous involvement, this being noted before the fortieth year. He quotes statistics to the effect that out of 229 operations there were 46 deaths.

Nash's first patient, thirty years old, had both tuberculosis and cancer in the family. Before admission to the hospital the patient suffered from diarrhea, flatulence, and distention of the bowels. The major complaint was pain in the abdomen. In the right iliac fossa there was a firm, tender, slightly movable lump. The cecum was found involved in the tumor, which was removed, the ileum being attached to the colon by a Murphy button. Four and a half years after operation the patient was reported to be in perfect health. Examination of the removed specimen failed to reveal any trace of the appendix, showing simply great thickening of the cecal walls with narrowing of the ileocecal orifice and dilatation of the ileum above. It was not until microscopical examination was made that the tuberculous nature of the affection was recognized.

The second case was twenty-one years old, with a cancerous family history. Before admission to the hospital he suffered with some pain in the lower abdomen, occasional attacks of vomiting large quantities

of food, for the relief of which symptoms his kidney was stitched up, although at the time this operation was performed a lump was felt in the right iliac region. Following this kidney operation the patient remained in good health for four months, when there was recurrence of severe pain accompanied by vomiting. The symptoms recurred for two months, when he was admitted to the hospital. Cecal tumor, together with enlarged glands, was removed, and the continuity of the intestine restored by direct suture. The tumor was due to great thickening of the walls of the cecum unaccompanied by mucous membrane involvement. The ileocecal valve was constricted. No trace of the appendix could be found. On section the growth looked and felt like fibrous tissue. This patient was in perfect health two years after operation.

ABDOMINAL HERNIA, CONSIDERED INCURABLE, CURED BY FILIGREE IMPLANTATION.

McGAVIN (*Lancet*, Nov. 23, 1907) after mentioning seven cases of hernia to which he has applied Bartlett's method of filigree implantation, states that all of the cases have justified his adoption of the method and fortified the claims put forward for its more extensive adoption. He publishes four cases which merit special mention, because three were in the region of the appendix, two of which resulted from the operation of appendectomy. All were incurable by any of the usual operations for ventral hernia, two of them being cases of recurrence, having been considered by surgeons as inoperable, and all were complicated by pain, retching, or inability to perform the ordinary duties of life owing to the constant prolapse of abdominal contents on the most trivial exertion.

The first case had undergone an operation for uncomplicated appendicitis. She wore a belt for nine months. On removing the belt the scar began to stretch, and the surgeon endeavored to repair the gap by approximating the muscles. The hernia reappeared three months after the operation. The patient was incapacitated by pain and

nausea in spite of wearing a belt. When the patient presented herself to McGavin she had a scar eight inches in length. The defect in the abdominal walls was as broad as the hand and covered only by very thin skin, to which the coils of the bowel were adherent. The peritoneum and the muscles were dissected free around the margins of the opening, and the filigree, measuring $6\frac{1}{2}$ inches in length and 3 inches in width, was carefully introduced, being laid upon the peritoneum. The rectus muscle and the edges of the oblique were drawn over the margins of the filigree and brought into as close apposition as possible. The aponeurosis was closed over the muscles and the skin incision was secured by the use of clips. The result was in every way successful.

The second patient, following trauma, was opened for suspected internal bleeding by a six-inch incision above the umbilicus. She was found to be suffering from tuberculous peritonitis with ascites and was drained. Five days later as the result of coughing the wound burst open, with the bowels protruding. These were returned and the wound was sutured, the patient being discharged in the course of a month cured. Later the wound began to bulge through a gap, which finally became four inches wide and five inches long. The patient suffered from recurring retching and pain. The cutaneous scar was removed. Because of the close adhesion existing between fascia and peritoneum no attempt was made to dissect loose this latter structure. The adjacent margins of the rectus sheath were split to the full length of the incision, the peritoneum and post-rectus sheaths were closed in one layer, a portion of the sac being utilized on either side to render closure possible, and upon this the filigree, measuring $6\frac{1}{2}$ by 3 inches, was placed, and the muscles were then with some difficulty closed over it. The anterior layer of the sheath was united to its fellow separately and the skin was closed by clips. The cure was complete and permanent.

The third patient, who had been operated upon for a cyst of the broad ligament, later developed an edematous swelling of the

right inguinal and iliac regions, which on being opened proved to be of ureteral origin, this channel having been tied at the time of first operation. A later attempt to find the proximal end of the ureter resulted in tearing of the bowel. The kidney was therefore removed through the loin. Gangrene occurred at the site of the ureteral abscess and left a defect in the abdominal wall resulting in a huge hernia. Through a gap about 7 by 4 inches a filigree 8 by 4 inches was inserted after excision of the cicatrix. A bed for the filigree was formed by incising the margin of attachment of the external oblique muscle to the aponeurosis for the distance of 8 inches so as to expose the muscular fibers. This permitted the aponeurosis sufficiently to meet the posterior rectus, to which it was sutured. The incision of the aponeurosis was thus converted into an ellipse which was floored by the peritoneum, and which was stripped from the posterior surface of the oblique muscle. After insertion of the filigree upon this bed the rectus muscle was brought out of its sheath from the outer side, and in its whole width was transplanted outward so as to meet the cut margin of the oblique muscles from which the aponeurosis had been divorced. Transplantation of the rectus muscle left an elliptical weak spot between itself and the left rectus, since the former was shrunken and partially atrophic. To close this the left rectus sheath was opened and the muscle to the left side was drawn across the middle line and sutured. The operation lasted two hours. Healing was uneventful, leaving a firm and resisting abdominal wall.

The fourth case was that of a woman operated on for suppurative peritonitis incident to gangrenous appendicitis with ulcerating fecal fistula, for the cure of which an enterotomy was needful. Later this patient developed a huge hernia at the site of the cicatrix. The sac was excised and the abdominal muscles approximated, but the hernia quickly reappeared. The length of the actual gap was $7\frac{1}{2}$ inches, its width $4\frac{1}{2}$ inches. Coils of adherent intestine could be seen in the sac, and peristalsis

was visible through the thinned-out and pigmented cicatrix. The entire hand placed flat upon the scar could be passed straight into the abdomen. The patient suffered at times attacks of agonizing pain. The entire cutaneous cicatrix was removed by an ellipse measuring 13 by 2 inches. An hour's dissection was necessary to separate the adhesions between the ileum, omentum, colon, and abdominal wall. An attempt to strip the peritoneum from the posterior surface of the abdominal wall resulted in so much tearing that a large portion of it was rendered quite useless for the purpose of carrying a filigree, a gap measuring 3 by 1½ inches remaining patent. As the omentum was not long enough to reach beyond the upper portion of the wound, into which it might otherwise have been sutured, the strongest loop of intestine in the vicinity of the gap was drawn into it and sutured on the outer side to the inner margin of the cecum, which was adherent to the peritoneum, and on the inner side to the outer margin of the conjoined peritoneum and posterior sheath of the rectus muscle. Upon this patchwork of peritoneum, intestine, and fascia the filigree was placed; it measured 9 inches in length, 4 inches across the center, and 3 inches at either end. The operation was then completed in a manner similar to that described in the last case, the filigree being covered by the atrophic rectus to the inner side and by the oblique muscles on the outer side. The frayed remains of the aponeurosis of the external oblique were united to the anterior sheath of the rectus muscle, and the skin incision was closed by forty clips and four stout salmon-gut tension sutures. The patient stood the operation, which lasted nearly three hours, very well, her convalescence was uninterrupted, and the clips were removed at the end of the seventh day. The patient has been perfectly comfortable since, with a firm abdominal wall. The filigree is constructed of 28 standard gauge, with eight loops to the inch.

McGavin states that Bartlett's is the simplest, shortest, and safest method yet devised of controlling cases of hernia of

all varieties (with the possible exception of femoral hernia) hitherto considered incurable.

THE "BOTTLE OPERATION" METHOD FOR THE RADICAL CURE OF HYDROCELE.

ANDREWS (*Annals of Surgery*, December, 1907) has evolved and used exclusively in the past two and half years the following simple and efficient technique:

In performing the "bottle operation" an anterior scrotal incision is made as usual. The skin should be held tense and the dissection should be carried to the exact layer which will enucleate the translucent, bladder-like mass from its bed.

Careful study of the funicular part of the sac is next made. Usually a little funnel continues one or two centimeters up the cord. The extreme upper end of this marks the beginning of the cut, which is anterior and vertical, and about two centimeters long. It is enlarged by stretching. Sometimes it is wholly confined to the cord portion of the sac. When the sac has been emptied it is like a bottle or bag, with a small hole at the top. Dilating this slightly with one or two fingers, the orifice is held open and the testis is pushed up into it with the other hand or the two thumbs. In a moment it can be squeezed through, and the whole sac will instantly be everted, with the small buttonhole so closely surrounding the cord that it is scarcely visible. The quickness with which this can be done will surprise any one used to the older methods. Further, there is no possibility of the testis returning into the hydrocele cavity.

The patients get about readily on the third or fourth day, sometimes earlier. The amount of swelling about the testis is usually small, even in double hydroceles. Tenderness and pain are moderate or absent, and no fever and malaise are felt after the second day.

This operation is suited to local anesthesia, and therefore can be done on the aged without risk.

No complications have occurred in a considerable series of these operations in the writer's experience, and so far as he

has been able to ascertain, no recurrences. The recovery has without exception been rapid and practically painless.

INTRA-ABDOMINAL TORSION OF THE OMENTUM WITHOUT HERNIA.

SKEEL (*American Journal of Obstetrics and Diseases of Women and Children*, December, 1907) notes that in eight or ten cases of acute torsion there existed old appendiceal adhesions, and believes that matting or clumping of the omentum is a predisposing factor. The majority of cases have been of acute character, though the symptoms do not appear until sufficient torsion has occurred to interfere with the return circulation. The diagnosis can be made only in the presence of an old hernia reducible with difficulty. The diagnosis of appendicitis has usually been made. Out of eleven cases analyzed by the author not one was properly diagnosed before operation. The temperature is as a rule only moderately elevated. In five instances the entire omentum was involved, in five a portion only, and one was a case of accessory omentum.

Corner and Pinches were able to find fifty-three reported instances in 1904, since which time the literature on the subject has become voluminous. The great majority of cases are found to be associated with hernia: The cases reported are classified as those occurring in conjunction with hernia, the twist of the omentum lying in the hernial sac, or the twist lying both in the sac and also in the abdomen, or the omentum adherent to the sac rotated above it. Torsion of the omentum in the abdomen has frequently been observed in conjunction with hernia, but with no apparent connection between the omentum and the sac.

Finally there is a pure intra-abdominal torsion with neither a history of previous hernia nor the presence of one at the time of operation. It is this last class with which Skeel particularly deals.

In the case the author reports the patient, a man twenty-one years old, suffered after a year of indigestion from an attack of

severe epigastric pain with vomiting and diarrhea. This lasted for four days, with intermissions. The abdomen was only a trifle distended and everywhere a little rigid. Cutaneous hyperesthesia was not marked. The most acute tenderness was just below and to the right of the umbilicus. The entire right side of the abdomen was dull on percussion and flat in the median line. No distinct mass could be felt. A McBurney incision was followed by a gush of bloody serum. The base of the appendix was readily found, but in endeavoring to trace it a large mass became apparent toward the median line, with free intestine between it and the incision.

Supposing this to be a secondary abscess, an incision was made over the center of this mass exposing a dark purple tumor, lightly adherent by its anterior surface to the abdominal wall. This was found to consist of omental tissue with a pedicle about the size of a finger. This was attached close up to the transverse colon and was twisted tightly five times around from left to right.

If hernia can be excluded, the quickly developed mass without the violent symptoms of suppurative appendicitis may point toward a probable diagnosis.

Smythe gives as the chief differential points between appendicitis and omental torsion the great preponderance of cases appearing in the male, the absence of nausea and vomiting, and the lower temperature. The pain is not so severe in torsion and the patient's countenance is not so anxious. Superficial dulness on percussion and the sudden appearance of a tumor in the absence of violent symptoms also point to torsion.

Skeel holds that superficial and extensive dulness with the early and sudden appearance of a sensitive but not especially painful tumor, or marked resistance over a large area in the presence of hernia, in connection with much milder symptoms than one would expect in appendicitis, sufficiently acute and spreading to give rise to such pronounced physical signs, are the most reliable guides in establishing the diagnosis of probable torsion of the omentum.

TEST OF THE STRING-CUTTING METHOD FOR IMPERMEABLE ESOPHAGEAL STRICTURES.

ABBE (*Medical Record*, Nov. 30, 1907) after a test of nineteen years offers a second report on the method which, with slight modifications, he demonstrated then for the first time as a novel and safe treatment of a previously hopeless condition of impervious esophageal stricture. He has watched until now the perfect health of the patient then reported. He records a second case, that of a child aged three, suffering from stricture incident to having swallowed lye. As it was impossible to pass an instrument from above, the stomach was opened and a whalebone probe was passed upward into the esophagus through the stricture. Only the finest filiform could be passed up through it. A string was pulled up; then a small, conical, Billroth bougie, but it stuck tightly. The string sawing with a second string, however, immediately relieved the obstruction, and in five minutes the largest bougie permitted by the normal child's esophagus passed stricture after stricture and appeared at the mouth. In this case more than half the esophagus was densely cicatrized.

The operation was completed by inverting the stomach opening and tightly suturing it about a feeding catheter by three purse-string stitches, one over the other.

The child sucked ice by mouth and was fed hot nutritive fluid through the gastric tube until it was strong. Then the gastric fistula was easily closed and rapid convalescence followed. Dilatation, as usual, was continued. In the course of a month, however, omission to continue this led to closure, though swallowing of soft food continued. Not caring to open the stomach again Abbe devised a metal dilating guide which carried a string down to the face of the stricture and back again, so that working entirely from the patient's mouth the stricture could be worn through on the same principle.

The action of this instrument is exceedingly quick. The head is held well back and the instrument is pushed well down the

straight esophagus until the probe-ending guide engages in the stricture, and the metal shoulder bears hard on it. While the operator forces the instrument onward, a third assistant pulls the string back and forth in the tube, and wears away the cicatrix where the string presses against it. It is thus impossible for the instrument to go astray from the canal, which widens as it advances, and harmful perforation cannot occur. With better attention to frequent dilatation during the ensuing year no more trouble followed. The child remains in robust health to-day and eats everything.

Abbe closes his paper with the following remarks:

(1) That most of the obstructive cicatricial esophageal strictures can be dilated from above and should be so treated; (2) that those which are only permeable by a fine bougie offer great chance of serious perforation of the wall of the tube during dilatation where much force is needed to push it through; (3) that such as admit a probe of some size can be safely cut from above by the string-cutting esophagotome; (4) that very tight or impermeable ones can always be safely, quickly, and permanently cured by gastrostomy, followed by the string cutting.

It almost goes without saying that this method should never be applied to esophageal strictures resulting from other causes, such as are made by pressure of mediastinal tumors, aortic aneurism, spasmodic strictures, or malignant stenosis. For these no better relief can be found than a permanent gastric fistula, which can now be made free from leakage by any one of several methods.

URINARY INFECTION IN CHILDREN.

ABT (*Journal of the American Medical Association*, Dec. 14, 1907) has recorded twenty-two cases of cystopyelitis in children, with two deaths. The youngest child was six weeks old; the others varied in age from three months to two years. The prognosis is regarded as favorable provided the condition be early recognized and treated.

Diagnosis is made by microscopic examination of the urine. The symptoms are those of an irregular, persistent fever for a succession of days. The presence of pus in the acid urine, together with epithelial cells with occasional casts and colon bacilli, is positive proof of the existence of a cystitis, a pyelitis, or both.

The infection is usually observed in female children, and is regarded by Abt as an ascending one. Marked leucocytosis is usually present. As prophylactic measures careful cleansing of the buttocks and genitalia is advised. If there is no mechanical cause the main treatment lies in the copious ingestion of fluids, especially water.

Urotropin is regarded as the best urinary antiseptic, given in one-grain doses to infants one to two years of age, this quantity being increased.

Salol is also serviceable, either alone or in combination with urotropin. Irrigations do not seem to be indicated.

In the discussion of Abt's paper Knox called attention to the frequency with which pyelitis complicates diarrheal disorders.

LUNG COMPLICATIONS FOLLOWING ETHER NARCOSIS.

OFFERGELD (*Archiv f. klin. Chir.*, Bd. lxxxiii, Heft 2) reports experiments upon animals with different methods of ether administration. As a result of the method of pouring the ether upon a tightly closed mask the animals suffered a bronchopneumonia, from which a portion of them died. In the animals anesthetized by the ether-oxygen method the majority suffered afterward from bronchial symptoms and small areas of bronchopneumonia, but these symptoms soon disappeared and no dangerous complications ensued. In those anesthetized by the drop method there was occasionally slight fatty change in the bronchial epithelium, while the parenchyma of the lung and the epithelium of the alveoli were unaffected. The fatty degeneration of the bronchial epithelium was recovered from in a few days without harm. These experiments show that of all the known methods of ether

narcosis the simple drop method, especially in reference to its influence upon the lung, shows its superiority. It appears almost as if the lung tissue tolerates better the simple ventilation with the air of the room than the excessive supply of oxygen through the anesthesia apparatus. It is, however, well to bear in mind that apparently, at least in the beginning of narcosis, more concentrated ether is delivered by the apparatus than by the drop method.

SURGERY OF THE HEART AND PERICARDIUM.

REHN (*Arch. f. klin. Chir.*, Bd. lxxxiii, H. 3) states that it is the opinion of all surgeons that a bleeding heart wound should be sutured. However, not every surgeon is qualified to carry out this operation, which, though it may be relatively simple, may at times be exceedingly difficult. The heart, the most precise of all machines, will tolerate a great deal without serious results. Podrez in searching after a bullet in the heart first probed the left chamber, then searched through it by acupuncture, introducing the needle ten times. Then he searched through the heart with the hand with considerable strength. Yet the heart did not cease to beat, and the patient, who was sixteen years old, got well. The bullet still remains in the heart.

The diagnosis of heart wounds offers many difficulties. If there is a large wound, no matter of what kind, and there is rapid filling and distention of the pericardium, there is certainly a wound of the heart. A marked continuous bleeding from an external wound in the region of the heart points toward an extrapleural wound of the heart, while the streaming out of frothy blood indicates only a hemorrhage inside the chest; the hemorrhage may be derived from the heart. The *x*-ray—that is, the stereoscopic *x*-ray—can, in the absence of conclusive percussion results, enable one to determine the filling of the pericardium. It shows in the most distinct way the enlargement of the heart, and it enables one to

decide in reference to the presence of a foreign body in the heart. We can with plausibility conclude that a heart wound is present if the external wound is in the heart region, and the kind and direction of the wound will allow us to draw a conclusion, especially if, besides the symptom of hemothorax or hemopneumothorax, abnormal heart sounds are to be perceived.

So far as the sounds are concerned, they can originate as well extrapericardially as intrapericardially; even the signs of a pneumopericardium are not proof of a heart wound. The diagnosis of heart-wound is more apt to be correct the more the precordial wound approaches the sternum—that is, the more it approaches the fixed part of the heart—or if it passes through the sternum.

A systolic splash is of great value in diagnosis, but it is not often possible to hear it.

In reference to the method of exposing the heart, the author says that it is a great advantage to operate in a Sauerbruch chamber or with the Brauer table. Even with this valuable assistance the principle that the heart must be exposed only after the most careful consideration holds good. This is demonstrated by the case which the author reports. The bone-flap methods must be subject to the greatest possible limitation and only be used when the indications are conclusive, since the resultant wound is an extensive one and likely to become infected. One must constantly seek to carry out the operation with the least possible injury and not at the cost of perfect control of the hemorrhage.

In some instances the diagnosis is vague, as in a case in which the external wound is distant from the heart. In such event it is proper to perform an exploratory pericardotomy. This must be carried out in the way that offers the greatest safety in caring for the pleura as well as proper emptying of the pericardium. The author describes his method of doing this. A bow-shaped incision about 6 centimeters in length is carried along the lower border of the seventh left rib toward the base of the

ensiform process of the sternum and across it. The incision is made of such depth that the seventh costal cartilage can be cut through close to its sternal attachment. The internal mammary artery is avoided. The finger is passed through the soft parts under the sternum along the inferior sternopericardial ligament. With the forceps a piece of the sternum and the seventh rib, as well as the sixth costal cartilage, are cut away. Through the opening thus made the pericardium is exposed, after removal of a more or less thick deposit of fat, at a place not overlaid by pleura.

The opening must be made up under the sternum so as not to open the peritoneal cavity. It is extremely easy to open the pericardium and determine the conditions in its interior. It is important to establish good drainage of the pericardium. It is not sufficient to open only the left side of the pericardium, for in this way the right side cannot be emptied. By the method described the incision is placed so that the right as well as the left side is drained and the incision is also at the most dependent part of the sac. If it is found through this pericardotomy that there is a wound of the heart, this organ can be laid bare by cutting through the sixth costal cartilage at its junction with the sternum. A critical moment is reached when the pericardium is opened in the case of a large heart wound because of hemorrhage. The manner of control of the hemorrhage is most important. It is very necessary to be able for a short time to operate in a field free from blood so as to determine the seat of the wound, its character, the presence of a foreign body, to properly insert the needle, etc. Some surgeons have controlled the blood by firm pressure upon the heart, others by lifting the heart out of the opening and bending the great vessels over the sternum. But these methods often provoke threatening symptoms, and it is desirable to have some less dangerous means of controlling hemorrhage.

The author carried out experiments in control of hemorrhage upon three dogs. In one dog the heart was kept free of blood

by pressure upon the venæ cavæ where they empty into the right ventricle, and a wound in the left ventricle sewed up. The experiment was entirely successful. In the second dog, whose heart had been acting badly beforehand, compression was made for forty seconds. The dog lived and appeared well. The third dog died upon the table. The left ventricle was cut from top to bottom and an attempt made to sew it up empty, but without success, as every stitch cut through.

Gottlieb likewise carried out for the author three experiments on dogs, with conclusions as follows: Through compression of the venæ cavæ where they join the right ventricle the hemorrhage from every heart wound can be stopped; by incomplete compression, however, it can be so far controlled that the suturing can be done almost bloodlessly. Incomplete compression is endured safely by the dog's heart up to four minutes, perhaps still longer; complete compression one to one and a half minutes, but longer than this is unsafe. Doubtless the human heart will withstand much more. In the dog's heart the ominous feature is the "Flimmern" (swimming), a manifestation of muscular insufficiency, which in the dog is almost irreparable, but in the rabbit and cat is only temporary.

The author would not hesitate in the presence of serious bleeding from a heart wound to compress the right auricle. The chief thing in suturing is to see that the sutures bring the edges of the wound securely together. Fine silk is the best material. A continuous stitch is dangerous; the best is the buttonhole stitch. The author reports a case, the second one operated upon by him, with autopsy. The patient died thirty-four hours after operation and forty-two hours after injury.

A SIMPLE LIFTING APPARATUS.

SCHULTZE (*Archiv f. klin. Chir.*, Bd. lxxxiii, H. 2) says that it is a common experience in operations upon the abdomen to have great difficulty in rendering the deep-lying organs accessible. Different

methods of overcoming this have been proposed, but on account of the imperfection of these the author has been led to devise an apparatus designed for this purpose. The construction is very simple and coincides with that of the usual bed-table of the photographic stand, except that it is stronger. A portable stand carries a rack which is moved by a pinion. The rack has upon the upper end a crosspiece which receives an iron bar whose length is equal to the width of the operation table. Upon this bar rests a bolstered board which can be changed according to the width desired. Upon the pinion is a small balance wheel which makes the apparatus easy to manage. The heaviest weight can be raised without any inconvenience.

At any time during the operation raising or lowering is possible without in any way disturbing the field of operation. The apparatus can be employed on any operation table. It is used by placing the support under the table at one side and the cross-bar upon the table. This cross-bar can be put under any part of the body of the patient, which can be raised or lowered at will by means of the rack and pinion.

BACTERIAL INJECTIONS IN THE TREATMENT OF DISEASES OF THE SKIN.

SCHAMBERG, GILDERSLEEVE, and SHOE-MAKER (*Journal of Cutaneous Diseases*, December, 1907), basing their treatment upon the now generally recognized fact that the bactericidal power of the blood against certain specific organisms may be raised by the injection of the proper quantity of a sterilized culture of these organisms, conducted a number of clinical tests, usually with cultures from the patient's own lesions. Twenty-one cases in all were treated. Of these nine were instances of sycosis vulgaris, three furunculosis, four acne, two acne with sebaceous abscesses, one eczema, one psoriasis, and one lupus erythematosus.

One case of sycosis vulgaris was cured, two were not improved. One case of acne was improved greatly, two cases slightly

improved, and three are almost well. One of furunculosis was cured, one almost cured, three were improved, one was not improved, and in one the flushing was relieved. In two cases of acne with sebaceous abscesses decided improvement followed. In the case of eczema with pyogenic lesions, the pyogenic lesions were cured and the eczema rendered amenable to treatment. One case of psoriasis was temporarily improved.

Considering the fact that the majority of these cases were rebellious, of long standing, and had resisted approved treatment of all kinds, the results must be regarded as encouraging. The authors state that no other treatment, save possibly the use of the x -rays, has given as good results in obstinate sycosis as opsonotherapy. These cases can be cured by x -rays, but it is necessary to bring about a permanent atrophy of the hair follicles, leading to more or less disfigurement. It is noted that since acne is not primarily caused by the staphylococcus the favorable results recorded by many observers are difficult of interpretation, and though it is possible that a secondary pustulation may be prevented by an inoculation of the culture of staphylococcus, it would seem more rational to employ in this disease the staphylococcus in conjunction with the microbacillus, which is regarded by some as an important etiologic element in the causation of this affection.

In furunculosis the results appear to have been more constantly favorable than in any other disease. In practically all the cases reported sole reliance was placed upon serum treatment, no local applications or general treatment having been given, except later in the rebellious and unsuccessful cases.

Wright calls attention to the fact that results are better when some agent which produces an increased vascularity of the affected area is used in conjunction with opsonotherapy.

He counsels such measures as radiotherapy, Bier's method of passive hyperemia, and phototherapy.

The authors suggest that blastomycosis, ringworm, favus, and actinomycosis are

affections in which this method of treatment should be given a trial.

Varney states that he has never obtained or seen such rapid improvement with other methods of treatment as that occurring within the first forty-eight hours after inoculation in selected cases of acne. He reports five cases of furunculosis, all of which were cured by bacterial injection; also two cases of sycosis vulgaris, one of which was cured.

Turton and Parker record 34 cases in which opsonotherapy was used, with excellent results in 30. Most of the cases were tuberculous.

Thorne reports a rebellious case of furunculosis of three years' duration cured by six staphylococcic injections.

ABDOMINAL RADICAL OPERATION IN SUPPURATIVE DISEASE OF THE UTERINE ADNEXA.

KLEIN (*Arch. f. klin. Chir.*, Bd. lxxxiii, Heft 3) says he is convinced that when a case of suppurative disease of the adnexa comes to operation, this should be done in a radical manner. Forty-eight cases of abdominal radical operation in suppurative disease of the adnexa are reported. Almost all of those had reached the stage of formation of a large mass. In many of the cases an ovary or part of an ovary was left behind, and in some cases the cervix. In gonorrheal cases one sometimes hesitates to make a complete removal on account of the youth of the patient, yet he always has cause to regret a partial operation. The results of treatment of these conditions by incision through the vagina, as well as total extirpation of the uterus through the vagina, do not give favorable results.

As regards the technique, the author sutures the peritoneum with catgut and the muscle and skin with aluminum-bronze wire. For all great vessels in the abdomen silk is used for ligatures, while elsewhere catgut is employed. It is not safe to use catgut on the large vessels. The author once lost a patient from secondary hemorrhage due to giving way of the catgut; since then he has used silk. It is not safe,

however, to leave silk in the abdomen in a suppurative case, for it will not heal in and keeps up suppuration. To avoid this the author leaves all ends of ligatures long and brings them out through the vagina. After three weeks they are removed. So long as the ligatures are in the vagina a daily douche should be given and a tampon of plain gauze put in. In thirty-nine cases the incision was made in the middle line; in nine the Pfannenstiel incision was made. This latter left almost no scar, and the author regrets that it cannot always be used. In the majority of the cases drainage through the vagina was established, in three through the belly wall, and in three no drainage was used.

The question of drainage is decided by the extent of the adhesion broken up. If much, then drainage should be used, especially to carry away fecal matter or urine which may extravasate due to injury to the intestine or ureter. By using vaginal drainage one avoids the danger of abdominal hernia at the site of drainage. The cervix was left behind in ten cases, in which the great thickening and rigidity would have made removal very difficult. However, this is not to be advised, for the presence of the cervix interferes greatly with drainage and leads to ligature abscesses and retention of exudate from the stump.

In four of the forty-eight cases wounds were inflicted upon the bladder or ureter, and in ten cases intestinal fistulæ resulted. Some of these cases healed primarily as a result of suture at the time of operation, others were cured by secondary operation, while still others caused death, or, if the patient lived, persisted. Out of the forty-eight cases operated upon, forty were examined after the lapse of various lengths of time after operation. In the majority of the wounds there were either very few or no after symptoms. This was probably due to the fact that either an entire ovary or part of one was left behind, except in cases already past or near the menopause, or in which both ovaries were hopelessly diseased.

THE TRANSPLANTATION OF ORGANS BY MEANS OF SUTURE OF VESSELS.

STITCH (*Archiv f. klin. Chir.*, Bd. lxxxiii, Heft 2) reports experiments on animals in lateral and end-to-end suture of arteries and veins, and in this way transplanting organs. The technique was that of Carrel.

Circular anastomosis was done on the carotid, femoral, and other arteries of the dog with excellent functional results as long as 150 days after the operation. Also, the aorta of the cat and rabbit as well as the posterior tibial artery of man were transplanted into the resected carotid artery of the dog with good functional result during life, manifest also at autopsy fifty days after operation.

Finally, the external jugular vein was transplanted into the carotid artery with good functional results, and showed, sixty-five days after operation, a thickening of its wall to accommodate the increased pressure to which it had been subjected. The blood-vessels of the kidney were implanted into the vessels of the neck of the same dog or of another dog and the ureter led out through the skin. This had the advantage of enabling one to see the urine which was secreted and to secure the same for examination. In both methods of operation the result was positive in so far that the transplanted kidneys for a number of days secreted a considerable quantity of fluid having the chemical qualities of urine. The animals at the end of this time sank as a result of pyelonephritis. In a later experiment the vessels of the extirpated kidneys were sutured to the iliac vessels and the ureters implanted into the bladder. During the first two days after the operation the animal was moderately weakened; the urine passed through the normal channel was blood-stained and contained blood-clots. However, the dog soon recovered quite well and took nourishment as formerly, and the urine was soon clear. From the beginning of the third week on the animal began to sicken again, and by the end of the third week died. At the autopsy

several abscesses of the abdominal wall were found; also some abscesses were found in the tissues around the implanted kidneys embedded in adhesions. There was present chronic peritonitis. The arterial and venous wounds were well healed. It is thus demonstrated that transplanted kidneys can heal in and secrete urine.

In the dog the left thyroid was extirpated and kept for microscopic examination. At the same time the right thyroid was transplanted by anastomosing the superior thyroid artery with the carotid artery and the vein with the external jugular vein. Fifty days later the gland thus transplanted was removed and compared with the left one removed at the initial operation. The two were similar, except perhaps the transplanted one showed a little excess of connective tissue and was richer in blood. In the same manner foreign thyroids were implanted in several dogs. The animals were still living at the time of the report and were being kept under observation for subsequent report.

HEART SURGERY UNDER DIMINISHED AIR-PRESSURE.

SAUERBRUCH (*Archiv f. klin. Chir.*, Bd. lxxxiii, H. 2) has carried out some experiments in operating upon heart wounds in a pneumatic chamber under varying pressure in order to determine the effect of collapse of the lung upon bleeding from the heart wound, also the significance of pneumothorax upon the course of the case. The experiments were done upon dogs and rabbits in a pneumatic chamber, often with ordinary atmospheric pressure, and often under pressure changing from zero to 10 mm.

Following are the conclusions:

The performance of operations upon the heart in a pneumatic chamber permits, on account of the abolition of the danger of pneumothorax, free selection of incision, and thereby renders possible the most rapid and suitable operation.

The possibility of regulating pneumothorax in the chamber offers the advantage

of reducing the hemorrhage from the heart wound during the suturing, which is further facilitated by relaxation of the heart wall. The possibility of regulating the pressure in the chamber permits, furthermore, after complete suture, through increasing the negative pressure to 7 to 8 mm., the removal of pneumothorax before closing the wound; by this means the disturbances of circulation dependent upon pneumothorax are abolished, and immediately there is brought about a marked stimulation of the heart's action. The removal of the pneumothorax implies a very essential diminution of the danger of infection of the pleural cavity. Especially in the placing of the stitches in the right heart in penetrating wounds, a temporary bending of the cava through luxation of the heart is of assistance.

LUXATION OF THE SEMILUNAR BONE OF THE WRIST.

POULSEN (*Archiv f. klin. Chir.*, Bd. lxxxiii, H. 3) states that formerly diagnosis of fractures or luxations of the carpal bones was made usually only when there was produced at the same time an open wound through which the injured bone could be seen. The condition was as a rule spoken of as an arthritis. The use of the *x*-rays has shown, however, that these injuries are not so rare as formerly supposed. Two bones especially are found to be the seat of injury, the navicular bone and the semilunar bone; the former is usually fractured, while the latter is as a rule luxated. The author has tabulated seventy-five instances of luxation of the semilunar bone.

The diagnosis is made as a rule only by the *x*-ray.

If the wound is an open one, the luxated bone should be removed. If the skin is unbroken and the injury recent, bloodless reposition is possible, and is in some cases carried out successfully. If one fails to replace the bone, he has choice between expectant and operative treatment. It is unwise to attempt reposition when the con-

dition has been present more than a few weeks. The tendency now is to proceed surgically in these cases. In recent cases, after the bone is laid bare, it can in some cases be replaced. If this cannot be done it must be removed. This should also be done if there is such contusion as to greatly lessen the vitality of the bone. Most of the cases seen are old ones, on which other methods of treatment have been exhausted.

The author has observed three cases of luxation of the semilunar bone. Two of these he treated by extirpation of the bone, with good results. The patients have much better use of the hand and are gradually improving still more, so that there is little doubt that the function will become quite normal. The third case refused operation.

EPITHELIOMA OF THE PENIS: AN ANALYSIS OF 100 CASES.

BARNEY (*Annals of Surgery*, December, 1907), basing his study on 100 unselected cases of epithelioma of the penis, 93 of which were taken from the records of the Massachusetts General Hospital during the thirty-three years from January, 1872, to January, 1905, the remaining 7 being gathered from private sources, has been able to trace 90 of these cases to a definite end. The youngest patient was twenty-five years old and the oldest eighty-two years.

The author reaches the following conclusions:

Epithelioma is practically the only kind of cancer attacking the penis, and its frequency forms only from one to three per cent of all cancers.

It occurs most frequently during the fifth, sixth, and seventh decades of life.

Phimosis is preëminently the most important of its exciting causes, occurring in over 85 per cent of cases. Circumcision, therefore, cannot be too strongly advised, especially after middle life, in all cases in which the prepuce cannot be easily and completely retracted. Syphilis and trauma are to be considered next in importance from an etiological standpoint.

Most cases seek relief during the first

and second years of the disease, but it is not unusual to see cases of from five to fifteen years' duration.

Pain occurs in 43.5 per cent of all cases. It is rarely severe, and usually occurs late in the disease.

Enlargement of the inguinal glands occurs in over 75 per cent of all cases. In 60 per cent these glands are cancerous. The rest show simply hyperplasia from septic absorption.

Glandular involvement may occur early, but from this series the writer is inclined to regard it rather as of late occurrence.

Inguinal metastases cause death sooner or later. If well advanced, attempts at their removal are to be considered only as "surgical vandalism."

Invasion of the vital organs occurs in over 15 per cent of all cases. It may occur without involving the inguinal glands.

Recurrence takes place up to one year after operation in over 39 per cent of cases, up to two years in over 19 per cent, up to three years in over 16 per cent, up to four years in over 6 per cent, and most notable of all, it occurs over five years after operation in more than 12 per cent of cases.

Its site depends largely upon the original operation performed, and will be local where only palliative operations have been done. It may occur several times.

The operative mortality is one per cent. This case died of sepsis, a misfortune which might occur in any operation.

The gross mortality is 32 per cent. That of the primary cases is 29 per cent, of the recurrent cases 38.5 per cent.

Thirty-eight per cent of all cases are cured; of these the primary cases form 36.5 per cent, the recurrent cases 2 per cent.

Early amputation of the penis at the pubes with thorough dissection of the groins is the operation of choice. If taken in the earliest stages, however, amputation alone may effect a cure. The operations of splitting the scrotum and transplanting the urethra into the perineum, or of total emasculation, offer no greater hope of cure.

The length of life from time of onset in primary cases is three years and four

months; in recurrent cases it is eight years and three months.

The length of life after final operation in primary cases is twenty-four months; in recurrent cases four years and two months.

Cases may live for over eleven years after the onset of the disease without operation.

Sexual power is not necessarily destroyed by amputation of the penis.

Melancholia (in this country at any rate) rarely, if ever, follows the loss of the organ.

Amputation, even close to the pubes, does not necessarily cause any disturbance of micturition.

The patient will be confined to the hospital for about fourteen days after the radical operation.

A CASE OF THROMBOSIS OF THE MESENTERIC VEINS CAUSED BY OPERATION.

BRUNNER (*Deutsche Zeitschrift für Chirurgie*, Band lxxxix, Heft 5-6) states that he has been able to find reports of 89 cases of thrombosis of the mesenteric veins; 31 were operated upon, and of these four recovered. One of these latter was a case operated upon by the author. The patient, a man sixty-two years old, of previous good health, in the winter of 1905-'06 suffered from obstipation and a feeling of painless fullness in the abdomen. In the summer of 1906 he suffered from pain in the back and recurring slight chills. On July 18, 1906, while at stool he suddenly had a severe chill, vomited, and developed a temperature of 38.6° C. He remained in bed for five days, but on getting up had frequently recurring chills, and a tumor was palpated below the navel to the left side. On August 3, 1906, he was admitted to the hospital. To the left below the navel was a small, ill-defined tender area of resistance which was one day plainly felt and on another quite indefinite. Very little flatus was passed. The stools were soft, mostly formed, of small caliber, somewhat stained with blood on the surface. There was neither pain nor vomiting except for one

day, after a thorough abdominal examination. As a rule the temperature was normal in the morning and rose in the evening to 38° to 40° C. The patient was often chilly, but had only one chill, which occurred shortly before the operation. The pulse varied from 80 to 130.

The diagnosis was carcinoma of the sigmoid with abscess formation and septic phlebitis. On account of this last complication operation was postponed, but as the condition grew worse it was performed on August 16. A median incision was made from somewhat above the navel to the symphysis. Some turbid fluid flowed out of the peritoneum. The small intestine, which first came into view, appeared normal, but the mesentery was markedly edematous. No carcinoma was found, but in the region where the tumor had been felt the knuckles of small intestine were dark-red, appeared to be in the early stages of gangrene, and were glued together, suggesting strangulation. The mesentery of this portion of the gut (about 12 centimeters) was thickened and bluish in color. The discolored part was triangular, with its base toward the intestine. There was a sudden transition from the abnormal to the normal portion of the intestine and mesentery. The affected part of the mesentery and intestine was cut out and anastomosis done with the Murphy button.

From the second day after the operation the patient slowly improved. The first stool was August 25, and the button was passed September 4. The temperature was normal at the time of the operation, and did not exceed 37° except on the fifteenth and the nineteenth day after operation, when it reached 38.3°. By the end of September the patient left his bed, and a year after operation was found to be well.

Microscopic examination of the specimen removed showed the condition to be one of thrombosis of the mesenteric venous branch supplying the affected part of the intestine. The cause of the thrombosis is believed by the author to have been bacterial infection from the intestine.

OBSERVATIONS ON SIX CASES OF ACUTE PERFORATING ULCER OF THE DUODENUM.

CODMAN, in commenting on perforating ulcer of the duodenum (*Boston Medical and Surgical Journal*, February, 1908), notes that such cases are often mistaken for appendicitis, and that even operation has not always cleared the diagnosis, since the surgeon has sometimes removed the appendix as a scapegoat because it was extremely inflamed and covered with fibrin, not having taken the trouble to observe that internally there was no ulceration or gangrene of the mucosa.

Codman states that during the last five years he has operated in the Massachusetts General Hospital on five cases of perforated duodenal ulcer and 82 cases of acute appendicitis and general peritonitis from appendicitis, a proportion of about 1 to 16. During the same five years all the other seventeen surgeons together have operated on 12 cases of perforated duodenal ulcer and 1130 cases of acute appendicitis and general peritonitis from appendicitis, a proportion of about 1 to 100. There seems little danger of the cases being confused with anything but appendicitis, which condition they simulate almost exactly. The appendix, indeed, should always be looked at first, and if it fails to show sufficient cause for the diffuse peritonitis search should be made further. It does not follow because a case recovers after removal of the appendix and drainage of the peritoneum that it was not one of perforated ulcer, since drainage alone may be sufficient to let the ulcer close and seal with fibrin. Such cases undoubtedly occur and are regarded as appendicitis.

Codman states that the following points in severe cases would make him suspicious of duodenal ulcer instead of perforation appendicitis:

1. Onset of pain more sudden and violent and more initial shock.

2. A contracted, concave, board-like abdomen. This seems to be very characteristic, though some cases of appendicitis have it, too.

3. Tympany over the normal area of liver dulness. This is by no means the rule, but when present is almost diagnostic. Gas may not always be noticed when the peritoneum is opened.

4. The vague symptoms of duodenal ulcer elicited by careful questioning.

5. Most of the patients are males between twenty and forty years.

6. Location of tenderness and pain is very deceptive.

There are a few points in technique which it will be well to bear in mind:

1. If perforated ulcer is suspected, it is well to be sure that small, curved, round needles are on hand, for one is much embarrassed with straight needles in suturing the perforation.

2. Make a high appendix incision and examine the condition of appendix first. Take it out if necessary, to be sure of the mucosa.

3. If the appendix is not perforated or gangrenous, carry the incision up the rectus high enough to see whether there is fibrin about the pylorus. If there is, carry the incision up to actual margin of the ribs. One needs plenty of room to do suture quickly.

One obtains the best view of the duodenum by pulling the gall-bladder out with one hand and hepatic flexure down with the other. Most ulcers are easy of access.

Suture the ulcer before washing out the abdomen.

Unless the ulcer is large and indurated or extends beyond the pylorus to the stomach, or there is stenosis of the pylorus, or the history shows severe pain and distress in the past, Codman does not advocate gastroenterostomy.

The prognosis of duodenal ulcer is better than that of gastric ulcer. The obstructions may be at the lower instead of at the upper end of the duodenum.

In operating for acute appendicitis the surgeon should always inspect the mucosa of the appendix unless perforation or gangrene is obvious.

The most interesting clue which these acute cases have given us has been in

directing our attention to non-perforating small peptic ulcers similar to those which do perforate. What proportion do perforate? If so many of the perforated cases have few symptoms before peritonitis sets in, may there not be a multitude which give few or no symptoms at all?

Somewhere between simple pain from hyperacidity and the classical duodenal ulcer with violent pain and tarry stools there lies a relatively unknown disease—the small peptic ulcer. We have not obtained a fair view of this disease from the autopsy end, because it may be that most of the cases get well. We do not know what proportion of them heal nor how long it takes them. We do know a few things about these ulcers: that they may perforate into the general cavity; that they may cause adhesions to neighboring organs; that they may cause cicatricial stenosis of the pylorus and the symptoms of gastric stasis; that they may cause adhesions to the gall-bladder. In addition we have those cases that cause few or no symptoms and which are confused with hyperacidity and nervous dyspepsia. The first question is, then, What proportion do perforate? It is generally supposed a large proportion; the writer holds to the contrary. The next question is, How are we to recognize those that have no intention of perforating? Codman believes that the cardinal symptom is "hunger pain" two to four hours after meals, if unassociated with ordinary indigestion and stomach stasis. The quality of the diet makes little difference. Such little ulcers will seldom show blood in the stools.

Codman offers the following theory as to the cause of duodenal ulcers and duodenal symptoms: There seems to be a general impression that as soon as food has gone into the duodenum it has a free pass along the rest of the route. But those who think this forget the cause of gastromesenteric ileus. Under certain conditions may we not get a subacute condition of this kind and have stasis of duodenal contents from partial obstruction where the superior mesenteric vessels cross the duodenum?

In other words, he suggests to stomach specialists another disease—duodenal stasis from chronic gastromesenteric ileus.

TREATMENT OF SCOLIOSIS BY CREEPING.

KUH (*Prager medizinische Wochenschrift*, Jahrg. 32, Nr. 52) observes that four-footed animals in walking bend the spine to one side at a certain phase of the progression, and to the other side at a subsequent phase. Following the example of Klapp, he has applied this knowledge to the treatment of scoliosis in the human being. In small children creeping is done without difficulty, as they simply follow their atavistic tendency. In older children whose spinal column is already stiffened the creeping motion must be modified. Klapp prescribes three modifications. In the first modification the child goes rapidly forward, and at the same time carries out rapid lateral movements with the entire spine relaxed, by this means producing considerable bending, which is increased by turning the head from side to side. The head is bent toward the side where the hand stands near the knee, and at the same time the child is instructed to look behind him.

In the second modification the child creeps quite slowly while the bending is forcibly done. The leg which is set back is placed toward the concave side, the head and shoulder-girdle are forced over toward the concave side, and by this means the curve of the spine is accentuated; the next moment the opposite position is taken.

The third modification consists in a forced curving of the spine without locomotion. There occurs not only a marked mobilization of the spine but also a repression of the ribs. Finally in certain forms of scoliosis the child is required to creep in a circle. The knees and hands are protected by sandals. At first the exercises are for a quarter of an hour forenoon and afternoon, and later prolonged to two hours daily. The method is contraindicated in weak and anemic children. The author does not consider it of much practical value.

ACUTE AND CHRONIC INFECTIONS TREATED BY WRIGHT'S VAC- CINE METHOD.

OHLMACHER (*American Journal of Surgery*, December, 1907) records cases of local staphylococcus infection which to his mind were greatly improved by injections of the staphylococcus opsonogen. Streptococcus infections were similarly benefited. The same favorable results followed the treatment by this method of acute erysipelas. A case of urinary infection injected with opsonogen obtained from the patient's urine produced marked improvement, the appetite returning, the anasarca disappearing, and the patient beginning to increase in weight. Moreover, the tumor over the

right kidney disappeared entirely. The treatment lasted one month. In all, four doses of opsonogen were given.

A number of cases of middle-ear affections were also treated in this manner. In one case the specific opsonogen was employed as a diagnostic test. The author remarks that the employment of this treatment to be successful must remain in the hands of those who have had years of experience in bacteriology and pathology, along with sufficient clinical education to enable them to use proper judgment. He states, moreover, that though the technique in making opsonic injections is easily acquired, it is of no value unless accompanied by a thorough grounding in the principles and practice of bacteriology and pathology.

REVIEWS.

THE DISEASES OF CHILDREN. A Work for the Practicing Physician. Edited by M. Pfaundler, M.D., and A. Schlossmann, M.D. Translated by Henry L. K. Shaw, M.D., and Linnæus La Fetra, M.D. Four volumes. Illustrated. The J. B. Lippincott Company, Philadelphia, 1908. Price \$20.00 net per set.

This splendid and exhaustive work upon diseases of children is one of the most notable contributions to the literature of this subject which has appeared for many years. Indeed, it may be considered an edition de luxe not only because it is so handsomely prepared but because it is so thorough in its text and it is so copiously and beautifully illustrated. Further than this, the authors of the various articles are recognized far and wide as authorities in the particular branches which they discuss in these volumes. An introduction to the four volumes has been prepared by Dr. Holt, of New York, who points out that although pediatric literature in the United States is barely a quarter of a century old, the past twenty years have seen the establishment of two special journals, an encyclopedia, eight general text-books, and a score of monographs or books upon special pediatric sub-

jects. Dr. Holt also points out that the improved knowledge in regard to the rearing of children, and their diseases, has resulted in a remarkable diminution in death-rate, so that the mortality of children under five years per 100,000 population has fallen in eighteen years from 1160 to 620. In other words, an annual saving of 12,000 children of this age in New York City alone.

The four volumes to which Dr. Holt contributes his interesting introduction deal with the pathogenesis and pathology of children, with the symptomatology of their diseases, and with the general prophylaxis and therapeutics of diseases of human beings below puberty. A chapter upon mortality and morbidity in infancy is also printed in Volume I. The remaining portion of Volume I is taken up with chapters upon nutrition and metabolism which are exceedingly interesting and of great practical value. The second volume opens with a discussion of the special diseases of different ages, as diseases of the new-born, etc., diseases of puberty, and then follows a

discussion of the general and diathetic diseases, such as diseases of blood, scurvy, rachitis, diabetes, etc. The second volume closes with an adequate discussion of the various infectious diseases of childhood. The third volume deals with diseases of the digestive, circulatory, and respiratory systems, and is one of the most interesting of any of the four volumes. Volume IV deals in its first part with diseases of the genito-urinary system, with those of the nervous system, and diseases of the skin.

Taking it altogether this work is distinctly epoch-marking in the literature of pediatrics. Edited first by distinguished German clinicians, and then reëdited in its English form by well-known pediatricists, every chapter has been translated by some American who is interested in his particular subject, and has therefore been able to present the author's views and his own in a clear and logical manner. Every one who devotes himself to the specialty of diseases of children should own these volumes, and no general practitioner can well afford to do without them, since in them he will find everything that deals with his patients during their period of childhood. We congratulate the English-speaking profession and the publishers upon the appearance of this remarkable and excellent publication.

DISEASES OF THE NOSE, THROAT, AND EAR. Medical and Surgical. By William Lincoln Ballenger, M.D. Lea & Febiger, Philadelphia, 1908.

Dr. Ballenger's book is one of the largest and most exhaustive volumes upon this subject which has appeared within recent years, and is, if anything, larger than Bosworth's well-known contribution to the literature of this subject. It is copiously illustrated with plates and ordinary black-and-white pictures, there being no less than 16 of the former and 471 of the latter. All of the illustrations are excellently produced, and, furthermore, the plates are more than ordinarily valuable because they are practical and interesting in their character. Indeed, the book is so copiously illustrated that it may be well said

that almost every operative procedure and pathological process is presented not only to the eye in type, but in pictorial form as well. The author expresses his own views and also very wisely embodies the views of other well-known writers in this country and abroad in this department of medicine. The various operations which are recognized as possessing value are carefully described, and the author takes pains to inform us as to the ones which he particularly admires. The latest therapeutic methods, not only operative but medicinal, seem to be included. Altogether we are much pleased with the book, and can cordially recommend it not only to practitioners of this specialty, but to general practitioners and students who wish to get the latest and best views in this department of medicine.

NERVOUS AND MENTAL DISEASES. For Students and Practitioners. By Charles S. Potts, M.D. Second Edition, Revised and Enlarged. Lea & Febiger, Philadelphia, 1908.

This excellent manual, which has now appeared in its second edition, is somewhat larger than it was at first, and provides a complete and yet precise summary of neurological information, with such illustrations as are necessary to make the text clear. Dr. Potts has had large clinical advantages for many years, and his experience as a teacher has enabled him to pick out the salient facts which are most needed by students and general practitioners.

NURSING THE INSANE. By Clara Barrus, M.D. The MacMillan Company, New York, 1908.

This book, as appears by its title, has been prepared by a woman physician who has had large experience in the care of the insane. As she well points out, the matter of nursing insane patients has undergone extraordinary changes within the last quarter of a century, so that at the present time the chances of recovery are materially increased because of these improved nursing facilities. There are 29 chapters in this book describing the work of a nurse in an insane asylum, and the methods which should be employed in the reception and care of patients who are suffering from

mental disorders. There are also chapters upon the forms of mental disease, and the power of habit, and one upon the nursing of the insane in private households and sanatoria. The directions which are given as to the conduct of a nurse in the presence of an accident or emergency do not seem to us to encourage the nurse in instituting measures of a radical character before a physician can be consulted.

PRACTICAL LIFE INSURANCE EXAMINATIONS. By Murray Elliott Ramsey, M.D. The J. B. Lippincott Company, Philadelphia, 1908.

Not only does this book deal with practical examinations for life insurance, but it also contains a chapter upon the insurance of substandard lives, which is an important subject in view of the fact that most companies now accept this kind of insurance in some of its forms. The volume is a small one of a little over 200 pages, and opens first with a discussion of the personal qualifications of the examiner, and then with the examination of the patient in general and of his various organs in particular. Chapter 11 deals with diseases and conditions affecting life insurance, and the twelfth chapter deals with the insurance of substandard lives. The well-known author, Dr. Charles L. Greene, of Minnesota, is freely quoted in regard to this important matter.

As a brief handbook of the subject under consideration it can be commended, although it is not as exhaustive as some of the other volumes upon this subject which have been published within recent years.

GLIMPSES OF MEDICAL EUROPE. By Ralph L. Thompson, M.D. Illustrated by Tom Jones. The J. B. Lippincott Co., Philadelphia, 1908.

The object of this book is well described in its title. The author has made no attempt to compile a guide-book, although much of the information which it gives will be useful to medical men who are about to take, or are taking, a trip in Europe. Practically every important medical center on the European Continent is described by the author. The illustrations are interesting and appropriate, and the book is of value

both to those who have been and are going to the other side of the Atlantic.

MANUAL OF FEVER NURSING. By Reynold Webb Wilcox, M.D., LL.D. P. Blakiston's Son & Co., Philadelphia, 1908.

This is a small volume containing lectures on fever nursing delivered to the nurses of St. Mark's Hospital during the season of 1907-1908. It is a useful manual for the class of readers for whom it has been prepared.

CLINICAL LECTURES AND ADDRESSES ON SURGERY. By C. B. Lockwood, Surgeon to St. Bartholomew's Hospital. Hodder & Stoughton, London, England, 1907.

A call for a second edition of this work proves the great value which the profession places upon the deductions incident to a large clinical experience when such deductions are the products of a clear mind not greatly influenced by the accepted teachings and beliefs of the day. His first lecture is "An Introduction to the Study of Clinical Surgery." In this he lays down three cardinal rules of diagnosis, which he states prevent any serious blunder. The first of these is to look at the whole patient; the second is to examine the whole of the diseased part, limb, or structure at rest; and the third is to compare the two sides of the body. He utters a protest against comparing the secretions and excretions of the body to cream, pea soup, coffee, and other kinds of food. In his interesting comments on intra-abdominal inflammation he explains the silly expression "dry belly-ache" on the basis that the first stage of bad abdominal pain is always felt in the middle of the abdomen. In speaking of intestinal obstruction Lockwood states that enemas given skilfully may be considered a test of the presence or absence of this condition, and that when they fail surgery is the next resort. Soap and water mixed with turpentine and castor oil is very efficacious. To this mixture may be added glycerin, or sulphate of magnesia. Purgatives by the mouth he considers should be avoided. In chronic intestinal obstruction Lockwood regards it as hardly safe to say more than that the cause is in some part of the large

intestine, while in acute it may be in the small. He notes that the surgeon may be entirely deceived by trusting to the mere distention of the intestine as a guide to the obstruction.

Secondary infection of the lymphatic glands in malignant disease of the tongue, carcinoma of the breast, varicose veins, inguinal and scrotal swellings, exploratory laparotomy, fecal leaks and fistulæ, the immediate diagnosis of tumors during the course of operation, clinical pathology—its relation to diagnosis and treatment, and

salivary calculi, are titles of other lectures in this book.

The author's observations are aptly illustrated by cases in his experience. His style of teaching is singularly vivid, and his suggestions, conclusions, and practices will in the main meet with the unqualified indorsement of those of experience. Thus the lectures which have appeared individually in current literature are well worthy of collection in book form, and their perusal will amply repay not only the student, but the hospital man of wide practice.

CORRESPONDENCE.

LONDON LETTER.

BY G. F. STILL, M.D., F.R.C.P.

London is busy preparing for the great Franco-British Exhibition, which is expected to bring an enormous influx of visitors not only from the land of "Liberty, Equality, and Fraternity," but from all parts of the world. It is difficult to see how such a profession as ours can be directly concerned in such an exhibition, but none the less the University of London is preparing an exhibit, as I am reminded by sundry appeals adjuring me and others of my kind to send copies of our scientific writings which have appeared during the past year. Presumably the university, fearing lest it should hide its light under a bushel, is projecting some sort of omnium-gatherum of recent scientific work to be published as an exhibit. It is to be hoped that it may meet with more favor than one would expect.

There have been repeated outcries in the lay press during the past few months with reference to the comparatively large number of deaths under anesthetics in the London hospitals. Guy's Hospital in particular has been most unfortunate in this respect; and one of the London coroners who is well known for his antagonism to the medical profession has gone out of his way to cast

imputations upon hospitals. Lately there is a growing demand for specialists in anesthetics at all the hospitals. Guy's Hospital has just appointed two additional anesthetists, and some institutions are contemplating having resident anesthetists; but any one who is familiar with the operative work of any of the large London hospitals must know that it is practically impossible to secure an expert anesthetist for every operation—a legally qualified medical man is all that can reasonably be demanded. But as B. F. J. Waldo, the city coroner, stated at an inquest on a woman who had died under chloroform at St. Bartholomew's Hospital a few days previously, only eight out of twenty-two medical examining bodies in Great Britain require that a man before being recognized as fully qualified to practice should produce any certificate of being skilled in the administration of anesthetics. It might very well have been asked how a medical student is to become qualified to administer anesthetics, if he does not acquire the necessary experience by frequently administering them before he receives the hall-mark of "qualification" which confers the right to practice but does not confer experience.

Mr. Sidney Holland, the indefatigable chairman of the London Hospital, has been favoring the public recently with his views on paying-patients at hospitals. "It is mid-

summer madness," he says, "to continue to give something for nothing to those people who can well afford to pay for it." He would have not only some contribution from each patient, but also some aid for the hospitals from the state. Like most laymen he entirely ignores the fact that the staffs of the London hospitals are almost all entirely unpaid, and that if they are to become servants of the state they will require payment just as any other employee of the state does, whether he be a naval surgeon or a medical officer of health; and when the members of the hospital staff are paid, the call upon the income of the institution, the money for the getting of which Mr. Sidney Holland has to lead "a dog's life," according to his own account, will be much greater and the chairman's life still more burdensome.

The Northeastern Hospital for Children in Hackney Road has suddenly blossomed forth as "The Queen's Hospital for Children." This change was made with Her Majesty's special permission, because there is a fever hospital known as the Northeastern, and confusion was apt to occur.

The medical officer of health for the City of London has recently issued a report containing some interesting observations on the milk supply of this city. He found that 54.2 per cent of the samples examined were "fairly clean," 37.5 per cent were "dirty and unsatisfactory," and 8.3 per cent were tuberculous. The proportion of samples showing tubercle bacilli varies remarkably little from year to year. The filthy condition of the milk is due largely to the very objectionable practice of mixing the various milks at the railway stations. Covers are taken off the churns, so that the milk is exposed to all the dust and dirt of a big railway station, and often a can which has been resting on the platform is dipped into the churns to take out some of the milk. In fact, as Dr. Collingridge points out in his report, the whole system seems specially designed to insure the dirtiest possible condition of the milk. It is not pleasant to observe that within the last few days a milk-seller was found to be storing the milk in her sleeping-room, and it is hardly to be

wondered at if the bacterial count is high under such conditions.

This week the annual election of a president for the Royal College of Physicians in London took place. This is the highest honor which the profession in this country has to bestow, and it was generally felt that the retiring president, Sir Richard Douglas Powell, physician-extraordinary to the King, was worthy of reëlection, and he was reëlected by a very large majority of the crowded comitia, thus entering upon the fourth year of his presidency.

A sad loss to the College of Physicians has occurred this month in the death of Dr. Oswald Browne, who since 1903 has held the office of Assistant Registrar to the College. He died shortly after undergoing laparotomy for some intraperitoneal suppuration in connection with a duodenal ulcer.

Professor Halliburton, the distinguished physiologist who has had honors conferred upon him by many learned bodies, has just received the honorary degree of Doctor of Laws from the University of Aberdeen.

It is but seldom that the Royal College of Surgeons exercises its right to confer its Fellowship by election instead of after examination. This has, however, been done quite recently in two instances: Dr. Keatinge, the Director of the Egyptian Government School of Medicine at Cairo, and Mr. T. J. Walker, consulting surgeon to the Peterborough Infirmary, have both been elected Fellows.

It is satisfactory to note that an antidote to the libelous poison which is constantly being circulated by antivivisectionists in this country has now been devised in the form of a Research Defence Society, the object of which is to educate the profession and the public in the true significance and the real facts of vivisection experiments. Wisely enough the promoters of the new society—to which the medical profession will surely wish every success—have enrolled amongst their vice-presidents men of all professions, soldiers, statesmen, ecclesiastics, and artists, and this very week there appears in one of our medical journals a letter in advocacy of the society by its president, Lord Cromer.

AN ACCURATE TABLE OF THE RELATIVE HEIGHTS OF THE COLUMN IN THE WATER AND MERCURY SPHYGMOMANOMETERS.

To the Editor of the THERAPEUTIC GAZETTE.

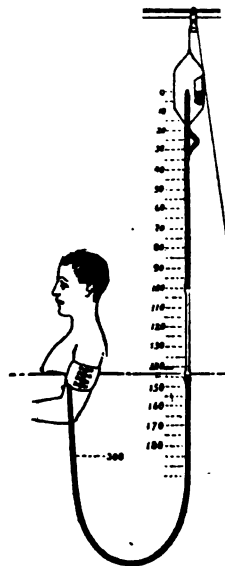
SIR: The subject of sphygmomanometric work is coming to the front, and as I believe that a hydrostatic method which I have devised offers by far the easiest way of detecting abnormal blood-pressure, I think a complete and correct table of the relative length of the water and the mercury column will be of interest to readers.

The following table has been worked out and verified by balancing a column of mercury against a column of water:

Millimeters of mercury.	Centimeters of water.	Inches of water.	Inches of water (nearest 1/16).
10	13.59	5.35	5 6/16
20	27.18	10.70	10 12/16
30	40.77	16.08	16 1/16
40	54.36	21.40	21 6/16
50	67.95	26.75	26 12/16
60	81.54	32.10	32 2/16
70	95.13	37.45	37 7/16
80	108.72	42.80	42 12/16
90	122.31	48.15	48 2/16
100	135.90	53.50	53 8/16
110	149.49	58.85	58 13/16
120	163.08	64.20	64 3/16
130	176.67	69.55	69 8/16
140	190.26	74.90	74 13/16
150	203.85	80.25	80 4/16
160	217.44	85.60	85 10/16
170	231.03	90.95	90 15/16
180	244.62	96.30	96 5/16
190	258.21	101.65	101 10/16
200	271.80	107.00	107
210	285.39	112.35	112 5/16
220	298.98	117.70	117 11/16
230	312.57	123.05	123 1/16
240	326.16	128.40	128 6/16
250	339.75	133.75	133 12/16
260	353.34	139.10	139 2/16
270	366.93	144.45	144 7/16
280	380.52	149.80	149 12/16
290	394.11	155.15	155 2/16
300	407.70	160.50	160 8/16

The author has found that water-pressure can be conveniently applied to the meas-

urement of human blood-pressure. A plan has been developed for the application of water to this measurement, and an instrument for it is being perfected by E. B. Meyrowitz, the optician, of New York. It consists essentially of two rubber bags con-



Hydrostatic method of measuring blood-pressure.

ected by a rubber tube, in one of which is placed about a pint of water, while the other is bound over the brachial artery. The one containing the water is then elevated until the pressure caused by the water running into the one over the artery has overcome the blood current in the artery. The details of this arrangement for applying this principle are shown in the accompanying diagram.

LOUIS F. BISHOP, M.D.

NEW YORK.



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ORIGINAL COMMUNICATIONS.

TEST TO DETERMINE THE ADAPTABILITY OF THE DONOR'S BLOOD TO THE RECEIVER'S BLOOD IN TRANSFUSION.*

BY JOHN FUNKE, M.D.,

Resident Pathologist, Jefferson Medical College Hospital.

Direct transfusion of blood in man, like many other things, has been introduced as a new procedure several times. The history of the operation is very interesting, but it is not the purpose of this communication to discuss this feature in detail. We find that the operation was undertaken by new discoverers sometimes for a different purpose from preceding experimenters, but abandoned by nearly all for the one reason—the danger to the recipient. Denis,¹ who was probably the first to perform the operation upon man, was prohibited by law from continuing, owing to the death of a patient into whom he had twice succeeded in introducing blood. It was clearly shown that death in this instance was not due to transfusion. Denis's adversary, Bourdelot, maintained at that time that the blood differs in different animal species, and hence transfusion must be regarded as a dangerous procedure, while Montpoly, who also opposed Denis, held that hematuria and epistaxis were favorable signs. During the eighteenth century very little was done, but the operation again came into favor at the beginning of the nineteenth century, it being done the greatest number of times between 1860 and 1874. It was during this period that Landois² began his work, and, after he demonstrated that animal serum would hemolyze human blood, the operation fell into discredit. He transfused in asphyxia, acute anemia, septicemia, uremia, poisoning by carbon monoxide and by

phosphorus. Between 1866 and 1875 the operation created great discussion among surgeons, Billroth³ holding that it might be possible to save exsanguinated animals by transfusing them with animal blood, but since this blood differed from that of man he regarded it dangerous to transfuse human beings with animal blood. Martin,⁴ on the other hand, believed the operation free from danger and maintained that it should be performed on exsanguinated patients. Landois thought the operation dangerous, but that it was worth the risk. His experiments show the following results:

Dog serum	+ Chicken blood..	Hemolysis.
" "	+ Cat "	Hemolysis delayed.
" "	+ Rabbit "	Hemolysis.
" "	+ Guinea-pig "	Agglutination.
" "	+ Lamb "	Agglutination 10 minutes.
Human "	+ Lamb "	Hemolysis 3 to 6 minutes.
" "	+ Rabbit "	Hemolysis 3 minutes.
" "	+ Guinea-pig "	Hemolysis 10 to 15 minutes.

The following statement summarized from literature does not include all cases transfused, but contains sufficient to draw a fair conclusion as to the results:

ISOMERIC TRANSFUSION.

(Human Beings Treated with Blood of Man.)

	Cases.	Per cent.
Favorable results.....	151	42
Unfavorable results.....	192	53.5
Doubtful results.....	16	4.4
Total.....	359	

HETEROLOGOUS TRANSFUSION.

(Human Beings Transfused with Animal Blood.)

	Cases.	Per cent.
Favorable results.....	49	36
Unfavorable results.....	62	45.5
Doubtful results.....	25	18.3
Total.....	136	

In many of these cases the first operation had very little or no untoward effect,

*From the Laboratories of the Jefferson Medical College Hospital.

but the second transfusion gave rise to bad results, due to the development of hemolysins against the foreign blood, or, as it is termed, the blood of the donee becomes sensitized to the foreign element. This increase in the hemolytic property is very well illustrated by the transfusion experiments of Bier,⁵ who believed that he could make the body adapt itself to foreign blood. Accord-

tain the compatibility of the blood of two individuals—that is, to determine whether the patient's serum will agglutinate the blood of the donee, or, *vice versa*, whether the donor's serum will agglutinate the blood of the patient. In order to secure accurate data on the subject I conducted a series of experiments, the results of which are recorded in the following table:

TABLE I.

PATIENT'S SERUM.	NORMAL BLOOD.								
	Undiluted.				Diluted 1 to 10. NaCl 0.85 per cent.			Diluted 1 to 10. Sodium citrate 1 per cent.	
	F	B	M	MM	F	B	M	F	M
Case I.....	++ 30 S	++ 30 S	+ 30 M	- 90 M	+ 5 M	+ 30 M	- 90 M	- 90 M	- 90 M
Case II.....	+ 1 M	++ 30 S	+ 60 M	+ 70 M	+ 30 M	....	+ 60 M	....	....
Case III.....	+ 1 M	....	- 90 M	....	+ 30 M	....	- 90 M	- 90 M	- 90 M
Case IV.....	- 60 M	....	? 60	....	....	....	....	....	....
Case V.....	++ 30 S	....	....	....	....	....	....	....	....
Pool I and II.....	- 60 M	++ 30 S	- 90 M	+ 30 M	....	....	....	....	....
Pool II and IV.....	+ 30 M	....	....	....	....	....	....	....	....
Pool IV and V.....	++ 30 S	....	....	....	....	....	....	....	....

S = seconds; M = minutes.

ingly, he introduced into a patient suffering with tuberculosis 10 cubic centimeters of lamb's blood. This was repeated three times without any untoward effects, but after the fourth injection of the same quantity of blood there occurred fever, epistaxis, and systemic and cardiac weakness. The fifth injection consisted of but 7 cubic centimeters, with the same untoward effects; the next, a smaller dose, was followed by less marked symptoms. Each succeeding dose was smaller, but always followed by unfavorable signs. The twelfth injection consisted of but one cubic centimeter and gave rise to fever and epistaxis. Here, with each succeeding smaller dose, there occurred unfavorable phenomena, yet the patient gained in weight and improved.

There are good reasons for believing that transfusion might prove a very valuable procedure, if one could determine, with accuracy, which blood would be favorably received by the donee. Dr. W. M. L. Coplin, whose services have been a great aid in carrying out this work, suggested the possibility of making preliminary tests to ascer-

TABLE II.

Normal blood F, 1 part. NaCl solution, 9 parts. Strength of solution in NaCl.	Parts of F's diluted blood.	Parts of serum, Case I.	Results.
0.3 per cent.	1	1	- 2 hours.
0.3 per cent.	1	3	- 2 hours.
0.5 per cent.	1	1	+ 1 hour.
0.82 per cent.	1	1	+ 10 mins.
1.0 per cent.	1	1	+ 30 mins.

These experiments show that the blood of MM could be utilized in transfusing Case I, and that the blood of M could be utilized in transfusing Case III. Table II shows that agglutination did not occur when the blood was diluted with weak salt solution, 0.3 per cent, nor when diluted with 1 per cent sodium citrate. It is, of course, necessary to try animal experiments with citrate dilution in order to determine whether or not bad effects will follow. This will be done and the results published later. Dieffenbach⁶ found when blood was mixed with sodium hydroxide (strength not given) to prevent coagulation almost lifeless animals were revived.

The experiments were made by microscopic and macroscopic methods. To determine the agglutinating property of a serum microscopically, five parts of serum to one part of the undiluted blood were thoroughly mixed on a suitable slide, then transferred to a cover-glass which was inverted over the excavation on a drop culture slide, oil having been placed around the margin of the cover to prevent drying. The slide was then examined under a 4 mm. Zeiss objective.

By this method one can determine whether the serum of the donee will agglutinate the blood of the donor, and one is informed as to the degree of the agglutination. I do not hold that in all cases where agglutination occurs transfusion will be followed by hemolysis and unfavorable results, but I do think that if the preliminary tests show the red blood cells in large clumps and that agglutination occurs at once, hemolysis is likely to follow.

A review of the literature shows that sera not only of different species but of the same species will produce hemolysis. As early as 1892 Maragliano⁷ called attention to the fact that the sera of diseased individuals would agglutinate the erythrocytes of normal persons; hemolysis may not occur. Landsteiner⁸ was probably the first to point out that the sera of healthy persons would agglutinate the erythrocytes of other healthy individuals. He also noted agglutination between the sera of mothers and their children. The phenomenon has been observed by many other investigators. Ascoli⁹ holds that even the serum of a human being may at times agglutinate its own red blood cells, but in this matter he receives the support of no other observer. He believes agglutination is more pronounced in disease than in health, and he maintains that in some diseases the agglutination is lost during or after convalescence. By the addition of fresh serum he was able to reactivate inactive human serum heated to 56° for twenty minutes.

Eisenberg¹⁰ on the other hand holds that isoagglutination is not a frequent occurrence in health, but quite common in disease. The greatest degree of agglutination observed

was in a case of Hanot cirrhosis. Some of his observations made seven years ago I have been able to corroborate. He found that the power of agglutination was not destroyed until the serum had been heated sufficiently to cause agglutination of the proteid. I have found that by introducing the serum into water heated to 70° C. for about three minutes to avoid complete coagulation, the agglutinating reaction was greatly diminished but not completely lost. I have never found it destroyed entirely unless the serum was coagulated, and then one cannot mix the red blood cells with the serum. Eisenberg has also observed that the hemolysis was much diminished when the blood was diluted with NaCl (normal), and I have noted that agglutination was diminished in a similar manner. He has found that if to an agglutinating human serum fresh rabbit serum be added the former becomes hemolytic, while if the same addition be made to a non-agglutinating serum hemolysis does not occur, or if the rabbit serum be heated for twenty minutes at 55° C. it does not make an agglutinating serum hemolytic. This would make it appear that agglutination and hemolysis are related phenomena,—the former probably a forerunner of the latter.

Agglutination has been found in human beings by Donath,¹¹ Leiner,¹² and Decastello and Sturli.¹³ The last named authors hold that certain sera contain more than one agglutinin, as they claim to have demonstrated that when a serum agglutinating two different bloods is exhausted by one blood it will agglutinate the second, although it will not agglutinate any more of the former. Bordet and Gruber¹⁴ hold that if erythrocytes be free from their serum hemolysis is less likely to occur when acted upon by sera of closely related species. This may be true of hemolysis, but I believe it not to be true of agglutination, for I saw agglutination occur with washed red blood cells. Donath and Landsteiner hold that if agglutinated red cells be thoroughly washed with normal salt solution to remove all the agglutinating substances and then allow normal salt solution to act upon the agglutinated cells at 50° C., the salt solution ex-

tracts a substance which will agglutinate the cells of the animal from which the digested erythrocytes were obtained. They have also found that extracts from various organs are hemolytic for certain erythrocytes. These facts would indicate that the extensive hemolysis that occurs upon introducing small quantities of serum is due in part to the action of the hemolyzed elements upon the normal cells.

Of the cause of agglutination or of the factors instrumental in bringing about the phenomenon little is known. It was thought to be due to the action of the globulins, but the experiments of Landsteiner and Donath lead them to believe it to be due to a substance which is carried by the globulins. Stewart¹⁵ holds the stroma of the erythrocytes to be hemolytogenic and agglutinogenic, a view supported by the observations of Donath and Landsteiner that normal salt solution acting upon red cells acquires agglutinating properties.

CONCLUSION.

Statistical study shows 42 per cent of the cases transfused to be favorable, and 53.5 per cent unfavorable. In all probability the last named figure could be greatly reduced

by searching for compatible blood, and I believe this can very readily be done by appropriate preliminary tests. If, upon animal experiments, the diluted blood should prove to be beneficial the danger from embolism would be diminished and the technique of the operation greatly simplified.

In closing I wish to thank Professor W. M. L. Coplin and Professor H. A. Hare for their valuable services and suggestions.

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THE VALUE OF ACETONE IN THE TREATMENT OF INOPERABLE CARCINOMA OF THE UTERUS.¹

BY F. HURST MAIER, M.D.,

Instructor in Gynecology in the Jefferson Medical College; Assistant Gynecologist to St. Joseph's Hospital.

It is a deplorable truth that the majority of women who come to the gynecologist suffering from uterine cancer belong to the unfortunate inoperable class. When we see the dire straits to which these unhappy individuals and their families are brought, it seems, viewed in the light of the great progress that has been made in the treatment of the operable class, as if comparatively little has been accomplished for the improvement of their condition. The attention and energies of the profession have been directed almost entirely along those lines that will bring the cases to earlier

diagnosis and to the determination of the most successful radical operative procedures.

The therapy of inoperable cancer is not nearly as unsatisfactory as is generally considered, nor is the prognosis always hopeless. Usually there is an arrest of the symptoms and a prolongation of life, with even possible permanent cures when least expected.

Czerny, before the "Konferenz für Krebsforschung" at Heidelberg in 1906, presented a series of remarkable cures of undoubted malignant growths.

Lomer reported a number of similar cases. F. Weindler in the *Zeitschrift für Gynäkologie*, 1907, No. 22, reported three cases of inoperable uterine cancer treated by curette-

¹Read before the Philadelphia Obstetrical Society, May 7, 1908.

ment and carbolic acid cauterization that were alive and healthy over four years afterward. Fraenkel observed six cases in which zinc chloride was the agent used that showed no signs of recurrence. Sims reported a woman alive and well five years after a palliative operation. Klobs had six cases, of which four were living and well four years, and Blau fourteen cases that were all well three years, after palliative operations.

That all cases do not do equally well depends upon a number of conditions. The age of the individual, the variety and seat of the cancer, as well as the method of treatment are all determining factors. Knowing what an important part the lymphatic system plays in the growth and invasion of the disease, it is not to be wondered at that the results obtained are far better in women that have passed the menopause than in those before. Adenocarcinoma is more rapidly destructive than the squamous-celled variety, and a growth encroaching on the bladder or rectal walls can be but incompletely curetted and cauterized. Furthermore, the treatment selected, as well as its technique, is of essential importance. The x-ray after persistent, careful, and thorough practice, has been found to be entirely useless. Electricity has given no beneficial results. The much-vaunted trypsin treatment, the cancrin of Adamkiewicz, and organotherapy have proven valueless, as well as the various injections of serums, alcohol, acetic acid, corrosive sublimate, methyl violet, venom of the cobra di capello, oil of turpentine, and arsenious acid.

Although the primary object of most of these measures was, and still is, only to reduce the weakening hemorrhages and to check the intolerable stench of the discharge with the view of rendering the condition of the patient less pitiful, yet our helplessness in this respect cannot be better illustrated than by the fact that two surgeons (Gottschalk and Kuestner) independently of each other devised an operation for the closing of the vaginal canal as a final expedient. In the light of our present knowledge that cancer is a local disease, whose malignancy depends upon cell proliferation and cell in-

vasion, it is not surprising that those measures that bring about direct destruction of the diseased tissues are the ones that give the most satisfactory results. This can be accomplished by means of thorough excochleation, followed by cauterization either with the Paquelin, chloride of zinc, formalin, carbolic acid, or one of the other caustics. If a single cauterization alone is to be done, possibly nothing exceeds the value of the Paquelin knife. The destructive action of heat, as well as its ability to seal the open lymphatics, seems to be the most effective. Even in the radical operations, Chrobak, Mackenrodt, Werder, and others have adopted it in cutting through the structures. Chrobak has had 11.2 per cent better results from its use.

To obtain the very best results from thermocauterization it should be done every four weeks, as recommended by Lomer. Unfortunately there are few patients who would submit to these periodical operations.

Formalin and the other agents are useful only in solutions, the strength of which precludes their frequent application.

In the April 27 number of the *Journal of the American Medical Association*, 1907, Dr. George Gellhorn, of St. Louis, published an article on "A New Mode of Treatment for Inoperable Cancer of the Uterus, by Means of Acetone." The author reported a number of cases whose conditions were decidedly improved and their lives undoubtedly prolonged as a result of this treatment. In a similar report before the 79th *Versammlung Deutscher Naturforscher und Aerzte* in Dresden, on the 17th day of September, 1907, he cited an increased number of cases with the same good results.

For a description of the treatment I can do no better than to quote from the author's paper. He writes that the treatment consists in the methodical application of acetone (C_3H_6O), which is a transparent, colorless, mobile, and volatile liquid with a characteristic ethereal odor and pungent, sweetish taste. On the skin it causes a sensation of cold. It is used in laboratory technique for hardening tissues for microscopic sections. Tissues shrink rapidly in acetone, owing to its intensely hygroscopic qualities,

and if left in the fluid more than half an hour they are, as a rule, too hard for the microtome knife.

It was the author's idea that if the ulcerating surface of the cancer could be hardened *in vivo*, the discharge could be checked until the escharotic portion would be cast off. The resulting free surface could then again be hardened. It would, perhaps, also be possible to harden deeper portions or even the entire tumor, thus rendering the malignant growth temporarily harmless. According to Gellhorn the treatment should, if feasible, be preceded by a thorough excochleation of the ulcerating area; the curetted cavity or crater is then carefully dried with cotton sponges, and from one-half to one ounce of acetone is poured into the wound through a Ferguson or other tubular speculum. For this purpose the pelvis of the patient must be raised, as in the Trendelenburg position. The narcosis may now be interrupted and the patient be left in this position for from fifteen to twenty minutes. Next, the acetone is permitted to run out through the speculum by lowering the pelvis of the patient, and the cavity is packed with a narrow gauze strip saturated with acetone. The healthy mucosa of the vagina and the vulva are cleansed with sterile water and dried. After this preliminary curetting and cauterization the regular treatment, which requires no further hospital care, is administered two or three times a week, beginning the fourth or fifth day after the operation. This is done without a narcotic, and may be given with the patient in bed or on the ordinary examining chair or table in the office. The pelvis of the patient is raised and the tubular speculum is inserted into the cancerous cavity. With the progressive diminution of the crater, smaller specula are employed. The speculum is filled with acetone and held in place by the patient for half an hour, and is then emptied in the manner described above. The immediate effects of this simple procedure are as follows: Any slight oozing is checked almost instantly. The surface of the crater is covered with a thin, whitish film. Wherever there is an extravasation of

blood, the discoloration is light-brown. The normal vagina is not appreciably irritated. On the vulvar mucosa and the outer skin an excess of acetone produces a faintly white discoloration, which soon disappears. There is no pain from the cauterization save a slight stinging sensation should the acetone come in contact with the skin. This, however, passes away rapidly if the affected parts be washed with cool water. In no instance has Gellhorn been forced to employ any anodynes.

The good effects of the treatment are manifest almost from the beginning. There is no return of the hemorrhage, as is well illustrated in Case 4 of my list, in which the bleeding had at several times nearly caused death. The discharge ceases, the patient no longer lives in a foul atmosphere, and the system is not subject to the drain imposed upon it by the loss of blood and discharge. The appetite returns and she improves rapidly in health. Like Gellhorn, I could not find that pain was in any way diminished, but, on the other hand, it was not increased, and could always be controlled with aspirin. The diseased area, subjected as it is to methodical cauterization, is visibly diminished. The cavity is reduced in size and its walls are smooth and firm.

Case 1.—J. P., aged forty-two years, has had four children and two miscarriages. Labors normal.

Present illness: For the past six months the patient has been suffering from irregular hemorrhages, foul discharge, and pains in the left iliac region. Loss of weight.

Examination shows that the cervix is the seat of a friable indurated mass that extends out into the left broad ligament.

Diagnosis: Inoperable adeno-cancer of the cervix with extension of the disease into the left broad ligament.

Operation: Curettement, under ether narcosis, was done August 19, 1907, at the Jefferson Hospital. The resulting cavity was filled with acetone, which was left in for thirty minutes, and then packed with gauze saturated with the same solution. The packing was removed at the end of twenty-four hours.

Postoperative history: After the operation the acetone treatment was carried out every third day.

October 9. Patient feels well. The bleeding and the discharge have not returned. Pain in the left iliac region still recurs, but is easily controlled by aspirin in 5-grain doses. Examination shows the cancerous area well contracted, and the walls smooth and firm to the touch.

December 9. Patient's condition is good. On examination the contracted area resembles a deep laceration of the cervix with extension of the cicatrix into the left broad ligament.

April 27. General and local condition of the patient good. There has been no return of the bleeding nor of the discharge. The pain still occurs at times. The patient has menstruated regularly, four to five days, without pain, every month since the operation.

Case 2.—Mrs. A. P., aged fifty-nine years; has had four children, born with normal labors. Menopause occurred fourteen years ago without any significant symptoms.

Present illness began five months ago with pains in the pelvis, extending to the right iliac region and down the right thigh. For the past three months the patient has suffered from a foul-smelling serous and serosanguinolent discharge. Lost 30 pounds in weight.

Examination showed the uterus enlarged and fixed, and the cervix a hard, infiltrated, friable mass.

Diagnosis: Carcinoma of the cervix with involvement of the surrounding parametria.

Operation: Curettement under ether narcosis was done December 2, 1907. The cavity was filled with acetone, which was left in for thirty minutes. It was then packed with gauze saturated with the same solution. The packing was removed at the end of twenty-four hours.

Postoperative history: The acetone treatment was continued every three days up to the present time.

May 1. Since the operation the patient has had no bleeding or discharge. The

pains in the right iliac region are controlled by aspirin.

Examination shows the cavity to be continuous with the vagina, with firm, smooth, well-contracted walls. The patient's general condition is much better than at the time previous to the operation.

Case 3.—Mrs. P. H., aged sixty-three years; married twenty years and has had four children; births normal. Menopause occurred fifteen years ago without any special symptoms.

Present illness began in December of 1907, with pains in the lower part of the pelvis and right hip, which were considered of rheumatic origin. Since February of this year the patient has been suffering from a foul-smelling, watery discharge that has at times been tinged with blood. She claims to have lost 50 pounds in weight.

Examination: The vaginal examination showed a large, hard, cancerous growth of the cervix that involved the vaginal walls as well as the surrounding parametrial tissues.

Operation: A curettement, under ether narcosis, was done March 9, 1908. The cavity was filled with acetone, which was left in for thirty minutes, and then packed with gauze saturated with the same solution. The packing was removed at the end of twenty-four hours. The acetone treatment was continued every three days until the 25th of April, when the patient left the hospital for her home in the western part of the State. An examination made several days before the departure of the patient showed that the cavity had decidedly decreased in size and that the walls were smooth and firm to the touch. There has been no discharge or bleeding since the operation. The pains in the right side recurred at intervals, but could be relieved by the use of aspirin.

Case 4.—Mrs. H. G., aged sixty-four years; four children, all artificial labors. Patient passed the menopause fourteen years ago.

Present illness: For the past eight years she has been troubled with hemorrhages and watery discharges that have become gradually more profuse. For six weeks prior to

the operation she had numerous dangerous hemorrhages that were only controlled by packing the vagina with gauze saturated with adrenalin solution.

Examination: Vaginal examination revealed an extensive carcinomatous growth that involved the uterus, vaginal walls, and surrounding parametrial tissues.

Diagnosis: Carcinoma of the cervix with extensive involvement of the body, vaginal and parametrial structures.

Operation: Curettement, under ether narcosis, was done May 21, 1907, and the acetone treatment practiced as in Case 3.

Postoperative history: The acetone treatment was continued every three days until July 10, 1907. It was then stopped on account of the patient developing a rectal

fistula. Patient died on the 2d day of August, 1907. From the time the treatment had been instituted until her death there had been no return of bleeding, and the discharge, up to the time of the occurrence of the fistula, had decreased both in quantity and odor.

In conclusion, if we may judge from the limited number of cases in which this treatment has already been successfully used, acetone as first used by Gellhorn offers at present the most practical method of accomplishing the best results. It is especially valuable in that after the primary curettement the treatment can be carried on by the attending physician without any particular apparatus.

1900 CHESTNUT ST., PHILADELPHIA.

THE TREATMENT OF SARCOMA BY MEANS OF THE ROENTGEN RAYS.¹

BY G. E. PFAHLER, M.D., PHILADELPHIA, PA.,

Director of the X-ray Laboratory and Assistant Physician to the Medico-Chirurgical Hospital; Adjunct Professor of Symptomatology in the Medico-Chirurgical College.

The value of the Roentgen rays in the treatment of sarcoma must be gauged by comparison with the results obtained by means of any other form of treatment. These comparisons dare only be made when cases of corresponding severity are considered, and since most of the cases treated with the rays were considered hopeless, it stands alone and above any other method. The value is finally measured by the percentage of cases recovering, by the permanency, and by the degree of associated risk and discomfort during the process of treatment. There is practically no risk and no discomfort during the process of treatment in skilful hands, which distinguishes it from other methods, and therefore the permanency becomes our main point of investigation. I shall take the liberty of reporting very briefly the condition of the patients upon which I based my report before the American Roentgen Ray Society, October 1 to 5, 1907 (*New York Medical Journal*, Dec. 21, 1907).

Of the twenty-two cases that were reported in detail at that time, fifteen had recovered or were recovering under treat-

ment. Of the eleven cases that had recovered at that time, ten have remained well. (For details of these cases see the original reports.)

Case 2.—Mr. J. L. M., aged twenty-one, was referred by Dr. W. L. Rodman December 11, 1905. A sarcoma had developed at the angle of the right side of the jaw to the size of an apple in four weeks. It was excised, and in three weeks it had recurred and grown to the original size. It was again excised, and on the fifth day after the second operation it was referred for Roentgen treatment, and at this time it was the size of half a hen's egg. Twenty-one treatments were given in five weeks, which was followed by complete recovery. He has had no treatment since and is still well, two and a half years after treatment.

Case 3.—A young lady of thirty years was referred by Dr. E. B. Gleason for treatment of a round-cell sarcoma involving the ethmoid and maxillary sinuses on the left side. From September 5, 1904, to April 1, 1908, or in three years and six months, she has had 394 treatments. After the first two months she was able to return to work, and has continued comfortable since. She occa-

¹Read before the American Therapeutic Society, May 7 to 9, 1908, Philadelphia, Pa.

sionally has a slight bloody discharge from the posterior nares, once or twice in a month. She reports for treatment once a month. She has been made comfortable, and her life has been prolonged at least four years, and we hope for recovery.

When it is considered that this was an entirely inoperable case from the beginning the results are gratifying, even though the treatment has been long.

Case 4.—Miss L. G., aged eleven, was referred by Dr. W. L. Rodman. A round-cell sarcoma had developed at the root of the nose and extended into the ethmoid cells. She was given thirty-one treatments between January 29 and April 18, 1907, since which time she has remained well, now over a year. Only a section was removed for microscopical examination, and the case was clearly inoperable from the beginning.

Case 5.—Mrs. E. P., aged thirty, was referred by Dr. W. W. Babcock, November, 1906. She had had three operations upon the right forearm for sarcoma (round-celled). Two weeks after the third operation there was a recurrence involving practically the entire forearm. At this time Roentgen treatment was begun and continued for five months, during which time she received thirty-two treatments. At the end of this time she was apparently well, and has remained well fourteen months. The arm has been saved and she has been able to do her house work.

Case 7.—Mrs. M. M., aged sixty, was referred by Dr. W. L. Rodman, April 26, 1904. She had had four operations in six years for round-cell sarcoma growing from beneath the right ear. The fourth recurrence was treated by the Roentgen rays during the first six months of 1904. She is still well four years later.

Case 8.—Miss L. B., aged eighteen, was referred by Dr. M. P. Warmuth, March 5, 1906. Following a bruise, a tumor involving the upper four inches of the fibula developed. A section was removed for microscopical examination, and it was found to be a round-celled sarcoma. Amputation was refused. After forty-seven treatments in three months she was symptomatically well, and has remained well two years, dur-

ing which time she has danced on this leg on an average one night a week and has suffered no inconvenience. (Figs. 1 and 2.)

Case 9.—Mr. F. B., aged fifteen, was referred by Dr. W. L. Rodman, October 29, 1902, and was treated for recurrent osteosarcoma involving the right upper maxilla. He was given sixty treatments in eight months, and has remained well five years.

Case 11.—Dr. X., aged thirty-two, was referred by Dr. W. W. Babcock, November 11, 1905. In May, 1905, he was operated upon for hematocele. September 2, 1905, the right testicle was removed, together with the glands from the right inguinal region, and microscopical examination showed it to be a round-celled sarcoma. There was recurrence in the scar, and two tumors developed in the left inguinal region which had grown to the size of hen's eggs at the time of beginning x-ray treatment. He was kept under treatment for a year and nine months, and has been well one year since treatment, and has been practicing his profession since the beginning of the treatment, or two and a half years.

Case 12.—A. E. H., aged four months, was referred by Dr. W. L. Fox, March 19, 1907. A sarcoma had been removed from the right lower eyelid two weeks previously. A recurrence developed. This recurrence disappeared in four months, after forty-two treatments, and has remained well about a year to date.

Case 13.—Miss L. G., aged eight, was referred by Dr. W. W. Babcock, May 7, 1907. She had received a blow upon the left side of the jaw six weeks previously. A tumor developed at the point of injury, and was removed one week previous to beginning treatment. The bone was found to be involved and was curetted, but was not resected. It was found to be a round-celled sarcoma. She was given thirty-five treatments between May 7 and July 19, 1907, when she appeared to be well. She remained well until December, 1907, when she had a tooth extracted from that side of the jaw, and immediately after this the jaw began to swell again. She has been given twenty treatments between December 28, 1907, and February 25, 1908, when the

recovered. She has remained well these two years since.

Case 16.—Dr. H., aged fifty-four, was referred by Dr. W. W. Babcock, May 17, 1907. Dr. Steel had removed a large sarcoma from the submaxillary region eight days previously. He was given postoperative treatment thirteen times until May 31, 1907. He is still well one year later.

Case 18.—Mrs. L. W., aged forty-four, was referred by Dr. L. W. Fox, May 18, 1906, for treatment of a sarcoma of the iris. She was given seventy-seven treatments in six months. The tumor was reduced to about half its original size, and there has been no increase or further symptoms in the subsequent eighteen months.

Case 22.—Mr. R. T., aged seventeen, was referred by Dr. Ernest Laplace, March 7, 1904. He had a large sarcoma growing rapidly inward from the right cheek. It had been cauterized without success. The external and the common carotid were ligated, and seventy-six treatments were given in seven months. The disease has remained stationary four years.

Therefore, to summarize, of the twenty-two cases reported in detail in 1907, twelve were reported as having recovered at that time. All have remained well excepting two. One was the little girl with sarcoma of the lower jaw in whom there was a recurrence following the extraction of a tooth; this recurrence has disappeared under treatment, and she has remained well three months since. The other case was the old lady with melanotic sarcoma upon the leg. There was a slight recurrence at the end of a year, which has disappeared under treatment.

Three other cases were reported as improving. One of these has apparently recovered. The other two have remained stationary, and may be well. Of the twenty-two cases previously reported, thirteen are apparently well, and eleven have been well from one to five years.

To this list I would like to add seven new cases, in which the results have been all that could be expected, but on the whole less satisfactory than the previous group.

Case 23.—Mr. F. E. L., aged thirty-six,

FIG. 1.

signs of recurrence had disappeared and she appeared to be well. She has remained well these five months since the recurrence which followed the extraction of a tooth.

Case 14.—Mrs. S. H. C., aged sixty-nine, was referred by Dr. W. W. Babcock. She was treated for recurrent sarcoma following two operations. After thirty-three treatments in four months the signs of disease had disappeared. She remained well about a year; then there were signs of a slight recurrence, which has again disappeared.

Case 15.—Miss S. G., aged fifty-six, was referred by Dr. Mary Griscom, February 2, 1906. A melanotic sarcoma had been excised from each scapular region three weeks previously. There were signs of recurrence in the wound at the beginning of Roentgen treatment. She received sixteen treatments in two months, when she had

was referred by Dr. Wies Hammer, November 18, 1907. The left testicle had been removed by Dr. Hammer five weeks previously, and upon microscopical section was found to be sarcomatous. A recurrence had developed in the wound, leaving a discharging sinus, and two tumors the size of a hen's egg were found in the left groin. He was having severe pain, and there was a rather profuse discharge from the wound, which showed no tendency to heal. He was treated forty-four times between November 18, 1907, and March 24, 1908, when all signs of the disease had disappeared. He has remained well since, which is about two months. During the treatment the right testicle and penis were protected from the rays, and they apparently functionate normally. In fact he is apparently well in every sense of the word. At one time there was a slight redness of the skin, but no further irritation, and at no time did he have to interrupt his work as a book-keeper.

This is the second case of recurrent sarcoma following removal of the testicle. Both cases had positive metastasis, and would have been hopeless from any other form of treatment, unless possibly from Coley's toxins. When it is realized that though hopeless they have recovered completely, and that without inconvenience or suffering, the results are most gratifying.

Case 24.—Miss M. F., aged fifty, was referred by Dr. John Deaver, November 21, 1907. She had had an amputation of the breast eight years previously. During the latter half of 1907 a tumor developed in the region of the third and fourth costal cartilages on the left side; it was about the size of half a hen's egg, firmly adherent, very hard, and its surface was of a bluish-red color. Dr. Deaver considered this imoperable. She also complained of severe pain in the region of the fourth and fifth ribs posteriorly, near the spinal column. At first I considered this referred pain from the lesion on the front of the chest, but later developments showed this to have been due to metastasis in the spine.

After two months the tumor on the anterior portion of the chest had practically

disappeared, but the pain in the back had become more severe. It was then realized that the pain in the back was due to metastasis. I then treated the spinal region very actively, but with no apparent benefit. The pains became more severe, and later the body became paralyzed and anesthetic below the waist line. It is possible that if this patient had been treated before the metastasis had developed in the spine she might have recovered.

Case 25.—Miss W. P. M., aged sixty-one, was referred by Dr. J. A. Peeples. About one year previously a tumor had developed in the right axilla and increased until it was the size of two large apples. There was also a mediastinal tumor about one and a half inches in diameter in the left chest underneath the junction of the first costal cartilage with the sternum, as indicated by percussion and by x-ray examination. She

was very pale and pressure symptoms had developed. (Figs. 3 and 4.)

Both the sternal and axillary regions were treated eighteen times in a month. Treatment was then interrupted for two weeks, at the end of which time the signs of

Within a week there were signs of recurrence in the lips of the wound. Treatment was resumed, and in all one hundred and ten treatments have been given. The wound had healed to within one and a half inches in diameter, then seemed to be at a standstill for a month, and the base of the ulcer was indurated. At this stage applications of pure carbolic acid were made to the base of the ulcer, which seemed to give some improvement.

However, I felt that something more was needed, and through the kindness of Dr. Coley a bottle of the mixed toxins was sent to me from the Huntington Cancer Research Fund by Dr. Martha Tracy. I gave daily injections, beginning with one-half minim and increasing the daily dose by a half minim, until she was taking seven minims.

She was given nine injections in all. The x-ray treatment was continued as before. She had some fever before the injections. The temperature rose on some days after the injection to 103° in the afternoon, about five hours after the injection, but was normal the next morning. There seemed to be more rapid improvement after the third injection, and I believe that this serum has been of decided assistance in this case.

Case 26.—Mr. G. T., aged forty-five, was referred by Dr. Ernest Laplace, February 14, 1908. He had injured his sternum. In six months a tumor had made its appearance upon the lower portion of the sternum, and found to be a chondrosarcoma. It was allowed to grow for twenty-one months, when it came under Dr. Laplace's observation and was removed. He was referred for operation eleven weeks after the first operation. At this time there was a recurrence about the size of half a hen's egg, and an induration of the tissues for an area about five inches in diameter. After fourteen treatments in one month there was distinct evidence of degeneration and reduction in the size of the tumor. Up to the present time there have been about thirty-five treatments given. The projecting recurrent tumor has been reduced to the level of the skin, and the man has returned to work.

Here again we were dealing with an apparently hopeless case, in which there has

FIG. 3.



FIG. 4.

disease in the mediastinum had disappeared and the mass in the axilla had become softened. It was then incised by Dr. M. P. Warmuth and a lot of degenerated material removed with the fingers. A hard gland was removed from the depth of the axilla, which was sectioned by Dr. Henry S. Wieder and found to be a large and a small round-celled sarcoma.

been decided improvement, and there is hope of recovery.

Case 27.—Mrs. R. H., aged thirty-six, was referred by Dr. W. L. Rodman, January 15, 1908. A tumor developed in the left breast shortly after nursing an infant. On this account Dr. Rodman considered it exceptionally malignant and did a most extensive operation. Eleven weeks after the operation pain developed in the left shoulder, the left side of the chest, and the left hand. On account of these pains she was referred for x-ray treatment. Twenty-one treatments were given in three months, with entire relief of pain, no sign of recurrence, and with every sign of health and comfort.

We do not know that there was a recurrence in this case, but the symptoms were suggestive, and she has been entirely relieved.

Case 28.—Mrs. A. B., aged sixty, was referred to me by Dr. R. S. Dorsett, October 7, 1907. About one year previously she had injured her thigh by a fall from a trolley car. A tumor developed at the site of injury. About five weeks before being referred to me for treatment Dr. J. Chalmers Da Costa had excised the tumor under local anesthesia. It was found to be a sarcoma that had undergone cystic degeneration. The wound healed in about two weeks, but the tumor continued to grow. When I first saw her the tumor was about the size of a hen's egg, embedded in the tissue, adherent, and apparently developing from the scar.

She was given forty-two treatments in six weeks. At the end of this time a dermatitis had developed, and the tumor had softened and gave evidence of fluctuation. Dr. M. P. Warmuth then incised the tumor; practically the whole mass had undergone degeneration, and was cleaned out with the fingers, December 12, 1907. An examination by Dr. A. J. Smith showed it to be a large spindle-cell sarcoma. She was treated immediately after, but a recurrence developed in the outer lips of the wound and soon involved the entire area again. Treatment was continued until March 4, 1908, when we decided to discontinue. Early in the treatment there seemed to be decided

benefit and we had hopes of a cure, but in the end this case must be looked upon as a complete failure. This may be due to the fact that it was a spindle-cell sarcoma.

Case 29.—B. B., aged nine, referred by Dr. Ernest Laplace, June 21, 1906. On June 13 Dr. Laplace resected the right half of the upper jaw. One year previously a tumor began to develop on the right side of the face. It was not painful but gradually increased in size, and finally the eye began to bulge. One week after the operation he was referred for postoperative treatment. He was given nineteen treatments. He has remained perfectly well since, which is about two years.

This case forms another example of the good results following resection and immediate postoperative treatment.

Comparison with Other Methods.—Too few cases have been treated to make statistics of any real value, but when the above cases are studied in detail, and it is realized that nearly all were inoperable or recurrent after operation, and that of the twenty-two such cases reported last fall fifteen have recovered, we must conclude that the results are more satisfactory than those from any other method. These recoveries have lasted from a few months to five years. When one sees a case that has a recurrence immediately after operation recover, and then remain well two and a half years to date, one must be convinced of the value of this treatment.

The cases treated or reported are too few to form a basis for prognosis, but from my observations I would expect at least twenty-five per cent to recover, and I believe if treated early, or at the earliest sign of recurrence, fifty per cent should recover. The results in the above cases would indicate even more than fifty per cent.

In the class of cases usually treated by the rays, the administration of Coley's toxins is the only other method that bears comparison. Coley claims eleven per cent of recoveries. Fortunately, operation, Roentgenization, and the administration of the toxins can be combined, and when two or three of these methods are used conjointly or in succession, the results will probably be best.

Recurrence.—Of the sixteen cases that seemed to have recovered, three have had a recurrence. One, a round-cell sarcoma involving the orbit and ethmoid cells, had a recurrence after a slight operation upon the nose, and the recurrence was rapidly fatal. Another round-cell sarcoma of the jaw-bone had a recurrence after the extraction of a tooth; the signs of recurrence disappeared after twenty treatments. A third case of melanotic sarcoma of the leg has had a slight recurrence, which disappeared under treatment.

It has been shown repeatedly that traumatism is an exciting factor in the etiology of sarcoma, so it is an exciting factor in the recurrence, and therefore operations in a sarcomatous area after apparent recovery should be undertaken only after due deliberation. Judging from the above results, there is comparatively little likelihood of recurrence, and as a rule these recurrences can be controlled.

Types.—It is perhaps too early to draw conclusions from the classification of the types treated, but from my experience I believe that the small round-cell sarcoma is most easily influenced by the rays, that the spindle-cell variety is most difficult, and that the mixed variety stands in an intermediate position. Three cases of melanotic sarcoma were treated with success.

Technique.—The mere possession of an x-ray apparatus is of the same general and comparative value as is the possession of a set of surgical instruments, and the sooner the profession realizes that no technique is more varied, more complicated, nor more difficult to acquire because it is difficult to describe, the sooner will we obtain uniformly better results.

In the description of Roentgen therapy much difficulty is encountered because of the lack of accurate means of measuring the dosage. This is particularly true in the treatment of deep-seated lesions, to which sarcomata usually belong. Here we have not only the danger of a dermatitis, but the danger of a toxemia, when large growths are made to degenerate and toxins therefrom are absorbed. For this reason much of the result will depend upon the skill and

experience of the Roentgenologist, not only in the application of the Roentgen rays but also in the close study of the constitutional condition of the patient.

In general we have four fairly definite factors to consider, which will enable one to repeat a dose and produce like results:

1. Distance of the anode from the skin. This will vary with the depth of the tissue involved. In the treatment of deep-seated lesions this should be about 10 to 12 inches.

2. Time and direction. This, too, will vary, but in general should be from ten to thirty minutes. Most of my patients received twenty minutes at each exposure. This should not be given in one place, but should be divided between two points, and in the course of treatment the tumor should be treated from every direction if possible. The neglect of this point is the cause of many failures. If the treatment is given from all directions, there will likely be produced a fibrous capsule which will encase the malignant cells that are not destroyed, and all of the malignant cells are more likely to be destroyed. In addition to these advantages, there is less likelihood of a dermatitis.

3. Vacuum, or the quality of the rays. So far we are only able to estimate the penetrating quality of the rays. This is best done by means of a Benoist or Walter scale. The rays, measured by the Benoist scale, Nos. 6 to 8, will likely give the best results in the treatment of sarcoma. An old tube will be found most useful in the treatment of sarcoma.

4. Amount of current passing through the tube. This is measured by means of a milliamperemeter placed in series with the tube. Measured by this means I find it difficult to use a greater current than one milliampere and keep the vacuum uniform.

Protection of the Skin.—The skin can in great part be protected by means of the filter which I have previously described (Proceedings of the American Roentgen Ray Society, 1905). This consists primarily of a piece of sole leather placed between the tube and the skin of the patient. Further protection is given by varying the direction of the rays and thereby the point of entrance of the ray. Likewise the greater the dis-

tance of the tube from the skin, and the higher the vacuum, the less the likelihood of a dermatitis.

Postoperative Treatment.—The value of postoperative Roentgen treatment is being more and more recognized. I believe that it is especially valuable in the treatment of sarcoma, because of the tendency to rapid recurrence, and because any remaining cells are likely to be destroyed or encapsulated. It is especially desirable when combined with "subcapsular enucleation" as strongly recommended by Babcock (*Surgery, Gynecology, and Obstetrics*, February, 1908). He recommends simple enucleation, and excision or resection of the diseased area in long bones. His objections to the major operations for sarcoma are: (1) The immediate mortality; (2) the mutilation, incapacity, and mental anxiety produced; (3) the fact that the most extensive operation yet devised gives no assurance against future disease, recurrence being the rule and per-

sistent cure the exception; (4) the operative trauma seems often to determine the point of recidivity.

CONCLUSIONS.

The following conclusions seem justifiable:

1. The method of selection in operable cases is subcapsular enucleation or excision, followed by a course of Roentgen-ray treatment.
2. The number of treatments necessary will vary with each particular case. A fair average would be about twenty.
3. In inoperable cases, or in patients who refuse operation, the Roentgen ray offers undoubtedly the greatest chance of recovery—25 to 50 per cent.
4. When the progress under treatment is slow, I believe it should be supplemented by the Coley toxins.
5. Finally, good technique is as essential to good results in this work as in any other special field.

PALLIATIVE TREATMENT OF MALIGNANT DISEASES BY MEANS OF THE ROENTGEN RAYS.

BY CHARLES LESTER LEONARD, A.M., M.D., PHILADELPHIA.

The value and curative efficiency of early surgical removal of malignant disease cannot be questioned, when that removal can be complete. It is as absolute a medical axiom as immediate operation for appendicitis. In both, however, the indications are dependent upon accurate diagnosis. Incomplete operations in appendicitis are less liable to produce harm than in malignant disease, as they afford drainage in the one, whereas in the other they often increase the opportunity for metastasis.

The group of severe malignant cases in which the most favorable surgical results are shown are those of cancer of the breast, in which the most recent statistics show that early operation gives 85 per cent of cures. Unfortunately but about one-third of the cases now presenting themselves for operation can be classed in this group—that is, where neither axillary nor supraclavicular lymph-glands are involved. They, however,

form indisputable evidence that all suspicious tumors of the breast should submit to early radical operation.

The necessity for early operation is further emphasized by a mortality of 69 per cent in cases showing slight involvement of the axillary glands, while the mortality rises to 90 per cent when the high axillary and supraclavicular glands are diseased.

These statistics show that in two-thirds of the cases of breast tumors operation can expect to be nothing but palliation, and that 80 per cent of these cases will die of the disease.

The surgeon is therefore confronted with the fact that he is operating upon nearly two-thirds of his breast cases when he cannot expect a cure. In this dilemma he should confess to the family physician and the friends of the patient, in those cases where glandular involvement is present, that the operation has been too long delayed to be

curative, and can only hope to be palliative in two out of every three cases. The failure to make this fact clear is responsible for the delay in sending patients for operation and for the infrequency of early operations.

So long as the general practitioner has patients returned to him after so-called complete operations, without the admission that because of the lymphatic involvement present they can only be palliative, and so long as he sees two out of every three of these patients die from recurrence, he will not believe that better results can be obtained by early operation, nor will his patients be persuaded to submit to earlier operation.

An increase in the number of early operations and a consequent decrease in the mortality from malignant disease can best be secured by a careful discrimination in the cases selected for operation and by the admission that operation is only palliation in advanced cases. The more the surgeon confines his operations to curable cases, the more cases will present themselves when cure is possible. The frank avowal of the palliative character of all operations in which the glandular involvement makes it evident that the known mortality is between 70 and 90 per cent will increase the confidence of the general practitioner in early operations and in his surgeon.

The possibilities of early radical surgical removal and the perfection of technique in operating are demonstrated by the 85 per cent of cures in operations on the primary growth. The inability to cope with the disease in later stages is also evident. Is there any method by which this high mortality in two-thirds of the cases presenting themselves for treatment can be decreased or greater palliation offered? The combination of ante- and post-operative Roentgen treatment with radical operation and the results obtained from the Roentgen treatment of recurrent growths point to this combination as a method of decreasing this high mortality and increasing the extent of palliation afforded.

Of the adjuvant Roentgen treatment a recent surgical writer has said (Haggard, *Journal of the American Medical Associa-*

tion, Jan. 25, 1908): "While it cannot cure cancer, except in the most superficial forms of epithelioma, it will produce a higher type of local resistance. It will contract the lymphatics and deposit fibrous tissue in and about the glands, which delays progress.

"It is on the same principle that Dawbarn ligates the arterial supply to starve and thus delay malignancy. The x-ray should be employed after operations especially in advanced cases. With this agent I now have a series of patients living, after five years, without recurrence of the disease. I am quite sure my percentage of cures has been augmented by this agent; although, to be sure, as one's experience increases, the selection of cases and the technical perfection of the operation must not be denied its quota of usefulness."

The increased palliation afforded by the combined treatment should undoubtedly be given to the 66 per cent of these cases presenting themselves too late for anything but palliation, while a decrease in the mortality in all cases will certainly follow the systematic employment of the Roentgen rays after operation. This treatment should not be confined to a few haphazard applications of the rays, but should be given with a thorough understanding of the degree of lymphatic involvement and regulated in length and severity by the evident malignancy and the extent of infection in the individual case. It should forestall rather than wait for recurrence, and can be applied through the dressings without injury and apparently hastens healing.

The patient's family and her physician should be plainly told, when lymphatic involvement makes it evident, that the operation is only palliative in two-thirds of such cases, and that the Roentgen treatment increases these chances and the amount of palliation to be expected. With a known mortality of from 70 to 90 per cent in such cases from operation alone no other course is honest, nor is it right to expect of the Roentgen treatment more than an added palliation where such is the known mortality from operation. Although it has produced remarkable degrees of palliation and

apparent cures in hopelessly inoperable cases, and in recurrences after radical operations, it is not right that it should shoulder the mortality known to follow late operations, or that the patient should be told that "it is to make a sure cure and complete operation more certain."

Malignant disease which is inoperable, or is so situated that statistics show that operation is followed by recurrence and death, is afforded a greater degree of palliation—that is, a greater length of life and less suffering—by Roentgen treatment than by incomplete operations. In authentic cases of inoperable sarcoma and carcinoma, the palliation has amounted to practical cure. In many such cases primary Roentgen treatment is preferable to incomplete and mutilating operations that increase rather than diminish the chances of metastasis and lower the vitality of the patient.

This is particularly true of cases of sarcoma where the increased danger of metastasis following operation is well known, and where it has been shown that Roentgen treatment is more effective if there has been no previous operative intervention.

The palliation afforded by Roentgen treatment is seen in the decrease or absence of all pain, and hence the avoidance of all opiates. If it accomplished nothing further, its value as a palliative would be established. In addition it localizes the disease by destroying the lymphatics, heals superficial ulcerations, making life comfortable, and where the lymphatic involvement is already too deep permits the patient to die in comfort from visceral metastases.

The amount of palliation produced in hopelessly inoperable cases is illustrated by the following cases:

A lady of about forty-five years of age was recently under treatment for a carcinoma of the antrum. The visible manifestation of the disease was confined to the superior alveolar border, where a tooth had recently been removed, and to the neighboring cheek. A Roentgenogram and transillumination showed the antrum filled with disease. A section of the growth showed its true character. The disease had been

present at least eight months before treatment was commenced. During the course of treatment, which extended over eighteen months, the patient was entirely free from pain, she slept well, her appetite was good, and her nutrition well maintained. She came with comfort to the office for treatment until the last few weeks of her life, and went out driving two or three times a week and even four days before her death. There were no metastases, the disease spreading by contiguity of structures, finally entering the brain and causing centric paralysis.

In another patient a mediastinal metastasis from an inoperable scirrhus produced a complete dysphagia for two weeks before the patient was seen. The treatment resulted in freedom from this and other distressing symptoms, and a prolongation of life in comparative comfort for over two years. A case of cancer *en quivosse* received equal benefit. Superficial ulcerations were healed and life prolonged for over two years, the patient dying from visceral metastases.

These are illustrations of the palliation afforded in a number of inoperable cases, while in many cases of recurrent growths and secondary lymphatic involvement the disease yielded to treatment and the patients are living four and five years after treatment was suspended. In one patient, from whom a small recurrent but inoperable growth was removed five years ago, supraclavicular nodes have recently been found, but have yielded to further treatment. This case shows that the previous treatment had been too closely localized and that recurrences after Roentgen treatment will yield upon its reapplication.

Theoretically the Roentgen treatment is valuable as a palliative not only because it destroys the diseased cells and increases the resistance of normal cells *in loco*, but also because it converts the lymph channels into fibrous cords and prevents metastases, as has been shown by operations after Roentgen treatment. It is also highly probable that the toxins produced by the destruction of the malignant cells stimulate the protective activities of the body and the forma-

tion of large quantities of antibodies or autogenous antitoxins.

The probability of this action is strengthened by recent observations that show a distinct rise in the opsonic index following treatment. The effect of large doses in producing autointoxication, where large masses of malignant disease are vigorously treated, has been clinically observed for some time and has been utilized as an index of effective dosage, and is an indication for temporary suspension of treatment. The fact that such autointoxications are produced by Roentgen treatment forms a contra-indication to synchronous antitoxin treatment unless the patient's condition and susceptibility are carefully studied. This need of caution was emphasized in the case of a patient under my care in whom antitoxic sera were employed by the family physician without consultation. The patient was rendered unconscious for three days and barely recovered.

The value of the combined toxins in the treatment of sarcoma has been demonstrated beyond doubt. The adrenals, the thyroid and the thymus glands have each shown some value as palliatives in the treatment of malignancy. Each would seem to have their sphere of application, but when the underlying principle of their action is determined they will be employed in conjunction with other methods with greater efficiency.

It is self-evident that whatever agent is employed in combating malignant disease must be used to produce its full physiological action and to the limit of tolerance of the patient. This is particularly true of the Roentgen rays; to be employed effectively they must not be used with a timidity that is born of ignorance. The greater success which has followed this treatment of epithelioma is in a measure due to the inability of many operators to employ it effectively in graver conditions. They do not possess the technique which fits them to employ this agent effectively as a palliative. This is particularly true of those who employ it in therapeutics alone. They cannot acquire that knowledge of the tube which

generates this therapeutic force and upon which its efficient use depends. It must be made to produce its power, and that power must be recognized. Its physiological activity must be utilized to the limit of toleration in the individual patient, and be guided by clinical experience that recognizes the effects produced and adapts the dosage to the individual patient.

This agent therefore has a wide field of use in the palliation of malignant disease, but good results cannot be expected unless it is vigorously and intelligently employed by those possessing the clinical and technical experience essential to its effective use.

PERFORATION IN TYPHOID FEVER.

In a symposium on this subject (*Pennsylvania Medical Journal*, January, 1908) MITCHELL reports as the result of work at the Pennsylvania Hospital 93 cases operated on; in 74 of this number perforations were found. The mortality of the cases of perforation was 77 per cent. Of 19 cases in which there was no perforation, 11 died. In 69 of the 74 cases there was but one perforation found.

Hayes reports a total of 38 operative cases of perforation with 14 recoveries—i.e., a mortality of 63.2 per cent. He used as a rule cocaine, thoroughly washed out the abdominal cavity with warm normal salt solution, and introduced a large glass drainage-tube to the bottom of the pelvis, closing the perforation by ordinary suture.

Hayes advocates the making of an enterostomy, introducing for this purpose a large rubber catheter, perforated on the sides, to its full length in the direction of the stomach.

Laplace in discussing this paper states that he would not trust to the mere repair of the gut, but would resect the ulcer-bearing area at once, and make an anastomosis of the intestine to restore its continuity.

Haworth states that in twenty cases of typhoid fever perforation in the last ten years he can report but one patient permanently recovered.

EDITORIAL.

THE RELATION OF FEEDING TO THE USE OF ANESTHETICS.

It is universally taught in text-books and by lecturers that prior to the administration of ether or chloroform, particularly the former, for the purpose of producing surgical anesthesia, it is the part of wisdom to starve the patient for twelve or eighteen hours in order that the chances of vomiting during and after the administration of the anesthetic may be largely put aside. Within the last few years an increasing number of cases have been reported in which severe toxic conditions have developed after the use of an anesthetic, so severe indeed that in a goodly proportion of them death has ensued, the symptoms present resembling, oftentimes with extraordinary accuracy, those which are so well known as characteristic of diabetic coma. Compared to the number of instances in which ether and chloroform are employed, the number of cases of postanesthetic poisoning, or toxemia, is, however, exceedingly small, but it has been pretty well proved that certain types of patients are much more prone to this accident than others, and that those in whom there is already present marked disorder of metabolism are particularly apt to be stricken.

The treatment, it will be recalled, of the symptoms is not unlike that resorted to for the purpose of combating diabetic coma.

A very interesting paper dealing with this subject has been published by Dr. William Hunter in the *Lancet* of April 4, 1908, in which he discusses delayed chloroform poisoning, its nature and treatment. The facts which he presents are well worth consideration with particular reference to the question of starving the patient prior to the administration of the drug, as he seems to prove pretty conclusively that this method of starvation distinctly predisposes the case to the accident which we are discussing. He believes that the vomiting which occurs under the administration of an anesthetic is

not of nervous origin, but essentially toxemic and due to the profound depression of the liver, with consequent diminution in its antitoxic function. Furthermore, he points out that this depression of the hepatic function is much more apt to occur in a liver already weakened by disease or poor nutrition, particularly if it is still further weakened by a period of starvation; or, in other words, that in the very class in which we are most anxious to avoid postanesthetic vomiting, because of the feebleness of the patient, we must also dread the effects of starvation and regard them as possibly more serious than the vomiting itself.

We have long thought that the routine starvation of patients prior to operation was unnecessarily rigorous, and it has been our experience that if the patient is allowed to take food which is easily digested and rapidly absorbed up to within a few hours of the operation, the results are almost invariably advantageous. For example, it has been our custom to see that patients receive, up to within four hours of the operative period, some barley gruel or other easily digested form of starchy food, the digestion and assimilation of which is hurried by the simultaneous administration of pancreatin or taka-diastase. Such a method of feeding leaves no residue in the stomach which can ultimately induce vomiting, and undoubtedly provides the patient with sustenance at a time when nutrition is most advisable. The well-known fact that soldiers go into a battle more bravely on a full stomach than on an empty one is applicable to the condition now under discussion, since the individual about to be the subject of operation usually experiences the same fears that are felt by those who feel that their lives are in jeopardy from other kinds of injury. Furthermore, the use of these starchy foods is infinitely better than the employment of beef tea or other forms of animal broths, since, on the one hand, the kidneys are not called upon to eliminate salts and animal extracts, and the liver is provided with plenty of

glycogen, which, in turn, enables it to perform all its functions accurately and with success. Hunter well points out that directly and indirectly defective glycogenesis may be responsible for some of the greatest disturbances, both functional and structural, to which the liver is subject. Thus, he states that:

1. Absence or deficiency of carbohydrate material (glycogen) in the liver cell involves an increased destruction of protein material with consequent wasting of the body.

2. This increased proteolysis involves an increased formation of toxic products in quantity, with consequent increased liability to toxic effects producible by such products.

3. The absence of glycogen from the liver cell by diminishing the combustion processes interferes with the destruction of toxic products, and this involves a diminution in the antitoxic powers of the liver cell. The starving animal is more easily affected by poisons than the well-fed (glycogen-rich) animal.

4. The loss of carbohydrate material caused by impaired glycogenesis (and the glycosuria of disease) involves extensive changes in fat metabolism and the withdrawal of fat from its peripheral depots to the more centrally situated liver, where it is more immediately available for purposes of combustion and energy production. The increased metabolism of fats thereby necessitated involves an increased formation of acids, and if long continued the "acidosis" thus occasioned may produce symptoms of acid intoxication of milder or severer degree (*e.g.*, acetonuria and diabetic coma). It may even in favorable circumstances be the chief factor determining the onset of the severer structural autolytic changes characterizing acute yellow atrophy, chloroform poisoning, and other severe liver conditions.

A few years ago surgeons paid little attention to the application of external heat to the body of the patient during the operative procedure, and this failure to recognize that the maintenance of the body heat was a most important factor in every case

undoubtedly cost a number of lives. We are inclined to think that before long the almost universal method of starvation before operation will be substituted by some such plan as we have suggested, and our own experience leads us to believe that its institution is practically never followed by disagreeable results.

In this connection a paper by Beddard in the *Lancet* of March 14 is of further interest. Beddard also points out that acidosis, or a condition closely allied to it, is present under these circumstances. He quotes Rosenfeld, with approval, as holding that chloroform poisons the hepatic cells in such a way that their metabolic processes are altered to the extent that while they can utilize carbohydrates they can but imperfectly deal with proteids, and even less with fats, and, therefore, as soon as the cells have used up their carbohydrate or glycogen, their hungry condition causes a breaking down of tissue proteid and a transference of fat to them; but since neither of these foodstuffs, and especially the fat, is properly utilized, the cells remain in a condition of severe starvation and so rapidly die. He also quotes Rosenfeld and others as having proved that if the poisoned animal is fed with dextrose, the transportation of fat does not occur because it is not necessary, and also that recovery is much more likely to take place than when the animal is starved. His deductions, therefore, are closely allied to those which we have already pointed to. Not only should patients be well fed with carbohydrates prior to operation or anesthesia, but it is advisable to feed them freely with dextrose by the mouth or by enema if any symptoms follow the use of the anesthetic. Beddard even goes so far as to suggest that a six-per-cent solution of dextrose be intravenously injected in urgent cases.

THE USE OF DIURETICS IN BRIGHT'S DISEASE.

In the presence of chronic contracted kidneys the polyuria which is usually present does not tempt the physician to employ a diuretic, but in parenchymatous nephritis,

when urinary secretion is usually scant and when albumin is present in large quantities, the routine administration of diuretics is very largely resorted to. That this method is by no means always wise is asserted by Brown in the *Clinical Journal* of January 22, 1908. Diuretics may act by dilating the blood-vessels of the kidneys and so increasing the supply of blood to these organs, or they may act by directly stimulating the renal epithelium. In other instances the diuresis seems to result from the constriction of the blood-vessels elsewhere, which results in a greater quantity of blood passing through the kidney, and finally the drinking of large quantities of liquid may increase urinary flow. In the majority of instances of parenchymatous nephritis the latter method of producing diuresis is evidently erroneous, because the nature of the lesion in the kidney is such that the ability of this organ to excrete fluid is materially impaired, a fact which is so evident that fluids are usually withheld from patients of this class except in moderate quantity.

Brown very properly raises the question as to whether it is wise to stimulate the structure of the kidney by the use of stimulant diuretics like caffeine, theobromine, and similar substances. Indeed, he believes that hematuria not infrequently follows such a use of these stimulants to the kidneys. The use of digitalis as a diuretic also seems unwise, since most of these cases have an abnormally high arterial tension which it is inadvisable to increase. If digitalis is used at all it should be used in association with the nitrites in order that the digitalis may stimulate the heart in such a way as to send more blood to the kidney at the same time that the nitroglycerin combats its constricting influence over the blood-vessels, and for this reason, as is well known, it is often wise to employ strophanthus instead of digitalis, since this drug is not supposed to affect the vascular system.

In acute nephritis, when the kidney is so inflamed that its function is largely in abeyance, the use of large draughts of liquid, and particularly of stimulant diuretics, is probably never wise. If any diuretic sub-

stance is employed, some mild and soothing diuretic such as the citrate of potassium is probably the best drug, and we are glad to find that Brown agrees with us in this opinion. Indeed, it is probable that by the use of this substance a considerable degree of anasarca may be diminished.

It will be remembered that we have more than once in these columns criticized the very common employment of Basham's mixture in large doses in acute and chronic parenchymatous nephritis because by these doses an excessive quantity of iron is taken into the body which tends to produce constipation, and which certainly is in excess of the needs of the system. Our own experience has been that equally good results can be obtained, as a rule, from liquor ammonia acetatis, without iron.

THE RELATION OF HEMOGLOBINURIA OR MALARIA TO QUININE.

It is not often that the medical profession is presented with so exhaustive an analysis of the literature of the cause, clinical history, and pathology of an important disease or complication of diseases as has been published by Deaderick in the *Memphis Medical Monthly* for the months of December, 1907, and January, February, and March, 1908. We have read these articles, since printed in monographic form, with much interest, the more so as we have published at various times, in the original and editorial columns of the *GAZETTE*, a considerable amount of information about that most grave state commonly called blackwater fever, or malarial hemoglobinuria.

As Deaderick points out, there are three different theories as to the nature of hemoglobinuric fever: First, that it is malarial; secondly, that it is the result of quinine poisoning, or the abuse of quinine; and thirdly, that it is a disease of itself associated with malarial infection. Against the theory that hemoglobinuric fever is malarial in its nature, the facts have been advanced that parasites are often absent from the blood when hemoglobinuria is present, or if not absent, are comparatively few in

number; again, that sporulation does not correspond in time with the development of hemoglobinuria; and, finally, that hemoglobinuria may be associated with different forms of the malarial parasite, although the estivo-autumnal parasite is the one which is most commonly present in the blood when hemoglobinuria develops. Additional reasons which have been urged against the relation of malaria to hemoglobinuria are that not infrequently the blood may be crowded with parasites without hemoglobinuria developing; that the geographical range of hemoglobinuria is not that necessarily of malaria, nor is its seasonal prevalence identical with that of malaria; and finally, that hemoglobinuria is not amenable to quinine, and indeed many physicians think it is made much worse by the administration of this drug. Deaderick quotes Stephens and Christopher as showing that parasites are present in the blood in 95 per cent of cases the day before the attack of hemoglobinuria, in but 70 per cent of the cases on the day of the attack, and in 20 per cent of the cases the day after the attack—statistics which are practically in accord with those reached by Mannaberg. The reason for the disappearance of the parasites the day after the attack may be in part due to the administration of full doses of quinine and to the fact that the active breakdown of corpuscles chiefly involves the weaker cells which contain parasites, and which therefore would be more prone to yield to any destructive process whether it was malarial in origin or due to another cause.

While it is true that the geographical distributions of hemoglobinuria and malaria are not identical, it is, however, a fact that hemoglobinuria is practically unknown except in malarial districts, and, perhaps, a more correct way of stating the facts would be to say that hemoglobinuria is present in only certain malarial districts and not in others. Of course, it is also a fact that prolonged residence in a malarial region and frequent attacks of malaria are certainly predisposing, if not active, causes in the production of hemoglobinuria; and again, there can be no doubt whatever that asso-

ciated with hemoglobinuria, malarial involvement of the blood is almost always found.

While Deaderick is of the opinion that malaria is essentially and solely the predisposing cause of blackwater fever, he thinks that it is only in some cases that it is the actual exciting cause. He also seems to believe that while the use of quinine appears to exercise a distinctly deleterious influence in some cases, this may be the result of coincidence rather than of cause and effect, the more so as the great majority of cases recover when large doses of quinine are continuously employed; at least this is his opinion, although it is well known that a very large number of men of experience believe that this is untrue.

Sambon, it will be recalled, does not believe that blackwater fever is commonly malarial in origin or due to quinine poisoning, but essentially a disease of itself, occurring side by side with the malarial infection, and Manson formerly advocated this theory.

The writer of this note has long believed, and stated in these pages, that a certain proportion of cases of malarial hematuria were associated with the presence in the body of another parasite than that of malaria, and we see no reason for changing this view. Deaderick quotes Collet as suggesting that the *Bacillus megatherium* has a direct relationship to blackwater fever.

Bignami has another theory in regard to the development of hemoglobinuria in connection with malaria which is based upon our modern knowledge concerning hemolysis. He believes that an alteration occurs in the blood plasma as the result of the changes which take place in the red blood-corpuscles which are infected by the malarial parasite, with the result that a substance is developed which is hemolytic in its nature, and it may be that this theory will afford, at some future time, when better developed with special reference to malarial infection, the true explanation of this interesting condition. It is quite possible, too, that ultimately it may be found that quinine which under some circumstances has no effect upon hemolysis may, in other condi-

tions, aid materially in the production of this destructive process. This view would seem to be supported by certain additional facts which have recently been brought forward concerning the effect of this drug. Thus, some writers have asserted that quinine when administered by the mouth will produce hemoglobinuria, although if given by the hypodermic needle to the same patients it would fail to act in this manner. Kohlbrügge goes so far as to assert that the inorganic salts of quinine are toxic and that the tannate or organic salts, even in the largest doses, do not produce hemoglobinuria in persons who are susceptible to other preparations.

While this view needs to be supported by other investigators, this idea, and the opinion that in certain cases of malarial infection quinine may produce effects on the blood of which it is incapable in others, receive some support by a communication which has been made by McCay of the Indian Medical Service, and which has been published in the *Indian Medical Gazette* as a contribution from the Physiological Laboratories of the Medical College at Calcutta. McCay advances the view that the hemoglobinuria depends largely upon the salt of quinine which is employed, and he believes that the sulphate is peculiarly prone to produce evil results. McCay believes that he has proved conclusively that the sulphate produces a modification of the blood serum not caused by some other salts, and he asserts that in every case in which the sulphate of quinine was given by the mouth a well-marked decrease in the salt concentration of the serum was observed, the rapidity of the fall also being in direct ratio to the quantity of the sulphate ingested. He believes also that these changes in the serum are directly responsible for the breaking down of the corpuscles by changes in the osmotic pressure, or equilibrium, which normally exists between the red corpuscles and the plasma, as the result of which the envelope of the red cell ruptures and hemoglobin is set free; or, in other words, that the administration of quinine sulphate even in small doses may in certain cases of ma-

larial infection alter the tonicity of the blood serum just sufficiently to result in the rapid destruction of weakened cells. McCay asserts that he has found that the administration of the hydrochloride of quinine fails to produce hemoglobinuria in instances in which the sulphate of quinine produced this disaster, and claims that he has proved that hemolysis does not take place in the red cells after the chloride is given, although it does not take place after the sulphate is administered. He therefore recommends that quinine hydrochloride shall be used universally in place of the sulphate.

McCay is firmly of the belief that black-water fever can be absolutely eradicated from a district by the active prophylactic administration of quinine, and that under these circumstances it matters little what particular salt of quinine is administered for this purpose. On the other hand, in patients who are saturated with malaria, and whose red cells are severely damaged, he believes that the administration of the sulphate in whatever form is dangerous, and that quinine hydrochloride should always be resorted to in combination with sodium chloride. In other words, McCay advances the view, which, after all, is not widely at variance with some of the views which we have already quoted, that malaria is not directly the cause of hemoglobinuria, but that the sulphate of quinine is the cause when the corpuscles have first been damaged by malarial infection, and when the blood serum has been secondarily influenced by the sulphate.

That McCay's theories are by no means adequate to explain the old question of the relationship of hemoglobinuria to malaria and to quinine is proved by the fact that a very large proportion of cases of severe malarial infection, by any one of the parasites, do not suffer from hemoglobinuria even if quinine sulphate is administered; and again, that in certain districts hemoglobinuria, in association with malarial infection, is exceedingly prevalent, even if no quinine is administered.

In this connection we may call attention to a note published in the same issue of the

same journal by Lukis of the Indian Medical Service, who is the Professor of Medicine in the Calcutta College. Lukis bases his remarks largely upon the research of McCay which we have just quoted. He states that he has long held the opinion that blackwater fever, as it is seen in India, is nothing more or less than quinine poisoning, although he has been forced to admit that quinine failed to produce hemoglobinuria in certain districts, and is also forced to contradict the statement of Stephens in his article upon "Blackwater Fever" in the new edition of Allbutt's Medicine, that the distribution of malaria in India and blackwater fever corresponds very closely. Lukis believes, in support of the theory already spoken of, that there is a coincident infection by another parasite, that a considerable proportion of cases of malarial hemoglobinuria are really due to the presence of the Leishman-Donovan body in the blood, and thinks that it is the presence of this parasite which explains the fact that certain districts in India are much affected by hemoglobinuria while other districts are not; or, in other words, that the association of the malarial parasite with the Leishman-Donovan body produces the hemoglobinuria, although infection with the malarial parasite itself does not so result. It is undoubtedly a fact, so Lukis asserts, that in kala-azar the blood is in an abnormal labile condition, and as we all know kala-azar is accompanied by the presence of the Leishman-Donovan body; and again, it is well known that quinine is undoubtedly harmful in this condition. Lukis is, therefore, undecided as to whether the quinine sulphate, as suggested by McCay, or the Leishman-Donovan body is really responsible for the hemoglobinuria. Lukis, however, reaches the following conclusions in regard to the important question of treatment in these cases:

1. Wherever microscopical examination is possible, quinine should not be administered until after the demonstration of malarial parasites in the blood. This rule is strictly observed in the Calcutta Medical College Hospital.

2. If no microscopical examination is pos-

sible, then quinine should be administered with great caution, and its use should be definitely abandoned if two or three moderate doses, given in solution, do not produce an appreciable effect upon the temperature.

3. In view of Captain McCay's observations, the hydrochloride or acid hydrochloride of quinine should always be used in preference to the sulphate.

DECOMPRESSIVE OPERATIONS FOR THE RELIEF OF PRESSURE SYM- TOMS COMPLICATING FRAC- TURES OF THE BASE OF THE SKULL.

It is well recognized that the bursting fractures at the base of the skull, incident to force applied, are in themselves of minor importance, and the often unfavorable prognosis is dependent upon associated injuries of the brain, either immediate from direct contusion, shortly sequential from blood extravasation, or following in the course of two or three days from edema—these last two conditions producing, in addition to immediate destruction of cells, such an increase of intracranial tension as to materially interfere with function or abolish it entirely. The inflammatory edema may produce an intracranial pressure greater than that obtaining in the blood-vessels and thus stop circulation.

It is almost the universal custom to treat patients who have received severe head injury uncomplicated by demonstrable fracture of the vault by the purely expectant method, in the absence of distinctly localizing symptoms of hemorrhage, such as occur, for instance, from wound or from continued bleeding of the middle meningeal artery.

The diagnosis of fracture of the base is usually suggested by subconjunctival ecchymoses, bleeding from the nose and ear, with continued escape of cerebrospinal fluid, late ecchymoses appearing in the occipital region in the absence of trauma directly applied there, and, when this symptom can be elicited, paralysis of cranial nerves, particularly those supplying the eye muscles. The

symptoms of cerebral pressure—i.e., slow, stertorous respiration; slow, full pulse; contracted pupil, choked disk, and unconsciousness—are in severe cases usually observed after the first period of shock is passed.

The presence of bleeding into the subdural space can be determined by lumbar puncture, and indeed this means has been utilized not only for diagnosis, but as a means of relieving intracranial pressure, though with but little accruing benefit to commend it. Such patients usually have ice applied to the head; their ears are cleansed and plugged if cerebrospinal fluid be escaping from them. Their bowels are opened, elimination from the kidneys is encouraged by enemas of half normal saline, if they are unable to swallow, and nature is left to do the rest.

Since intracranial pressure is the main factor in the immediate fatal issue of these cases, the idea of relieving this has occurred to many.

Cushing has proposed a procedure followed in his own experience by extraordinarily successful results. It is evident from his contribution on this subject (*Annals of Surgery*, May, 1908) that it is his routine method. He treats these cases of bursting fracture by a subtemporal exploration through a split-muscle incision, combining with the removal of a thin circle of bone, about $4\frac{1}{2}$ centimeters in diameter, from under the muscle an opening through the dura. He states that whilst the mortality in cases of basal fracture under conservative treatment is about 50 per cent, he has only lost two out of the last series of 15 cases treated by the method he describes; both of these fatalities were due to the fact that a unilateral exploration alone was performed, and an extensive extravasation—extradural in one case, subdural in the other—on the opposite side of the head was overlooked.

The advantages of the procedure are, he states, as follows: (1) The approach is made through the thinnest available part of the skull. (2) The opening is made under the temporal muscle, the fibers of which are split and not divided, so that, when closed, they serve to prevent too great bulging, if

the tension tends to make the brain herniate, and serve also to prevent a subsequent obtrusive depression when the normal conditions have been restored. A subsequent defect in this situation is absolutely harmless. (3) In case there has been a rupture of the meningeal or of one of its branches the extradural clot is certainly brought into view by this opening, and as the meningeal trunk is exposed the vessel can be easily ligated. (4) In all bursting fractures accompanied by laceration of the brain it is the tips of the temporal and base of the frontal lobes which most frequently suffer, and a subdural extravasation from this source can most readily be dealt with through an opening in this situation. (5) In a large proportion of bursting fractures the lines of fracture seek out the midcranial fossa, and hence free bleeding from the base can be most easily drained through the temporal fossa by protective drains placed under the temporal lobes. (6) The subsequent edema and swelling of the brain, which is an almost invariable sequel of any serious cerebral contusion, and which is responsible in many cases for the pressure symptoms during the first two weeks, can be best combated by an opening in this situation under the muscle. (7) Aside from the prompt subsidence of the acute symptoms which is often seen after these operations, they appear to lessen many of the unpleasant late sequels—traumatic neuroses—which are so often a feature of the cases which have recovered without operation.

Cushing believes, in view of his experience with this simple operation—which, in so far as the approach to the cranial chamber is concerned, differs from the subtemporal decompressive operation for tumors only in the obliquely vertical instead of curvilinear direction of the scalp incision—that less risk is run even in the milder or border-line cases by a prompt exploration and decompression than in waiting for nature to take her own course in absorbing extravasations and edema in an unopened skull.

At first glance his proposition would suggest the views of an extremist who believes

that he has not done his duty by any patient who has escaped from his charge without an operation. Nor is the number of cases in which Cushing has practiced this procedure sufficiently great to be convincing. In all hospitals there runs a series of accident cases attended by high mortality, and another of apparently equal severity in which there will be but few deaths. This is sometimes called the luck of the service. Cushing's statements are, however, based on clinical fact, his deductions therefrom are logical sequences. The procedure he proposes is simply and easily applied, safe in the modern hospital, and in many cases quite sure to accomplish much good. The value in hemorrhage is self-evident. That it may prove a turning factor in cases of edema following cerebral trauma can be demonstrated by a larger experience. Because of its reasonableness there is little doubt that it will receive a thorough trial, and that promptly.

ACQUIRED DIVERTICULA OF THE SIGMOID FLEXURE.

Because of the papers of Mayo and Brewer upon this subject, the attention of the profession has been directed to inflammatory affections in and about the sigmoid to which the terms sigmoiditis and perisigmoiditis have been applied, and by which terms are now expressed a fairly definite symptomatology. The frequent dependence of these cases of inflammation of the sigmoid, and incidentally of local or even general peritonitis, upon diverticula has been repeatedly shown.

Telling (*Lancet*, March 21, 1908), in traversing this subject, notes that diverticula may occur in any part of the intestine and may be differentiated into two kinds, the congenital and acquired. Meckel's diverticulum is most frequently encountered, but other diverticula may occur in any part of the large and the small bowel. Acquired diverticula may also be found in any portion of the gut, instances being recorded in the vermiform appendix. They are most frequent in the large intestine, and especially

in the lower part of the descending colon and sigmoid flexure. In this situation they are usually multiple and undergo secondary pathological processes with somewhat characteristic symptomatology.

Telling has collected 105 cases, 22 of which are new to literature. He notes that diverticula occur in two rows, either at the sides of the gut or close to the mesenteric attachment, at points where vessels pierce the gut walls. The commonest situation is in the appendices epiploicæ—this because the attachments of these appendices represent points of minor resistance. The largest size attained is about that of a hazelnut. The aperture in the gut wall is usually smaller than the maximum diameter of the diverticulum. This is particularly true in regard to the diverticula which enter the epiploic appendages. They are usually filled with fecal matter and often with concretions, except those of the small intestines.

Diverticula are observed in middle-aged or old subjects, and affect by preference fat males or those who having been fat have wasted. Their development is customarily preceded by constipation. Diverticula occasion no symptoms until the secondary pathological processes incident to inflammation develop. As a result of the progressive enlargement of the hernial projection there is an atrophy of muscular layers and the glands of the mucosa, the sac ultimately becoming extremely thin. The retained hardened feces are likely to cause inflammation, which may result in either local abscess or in general peritonitis.

Telling summarizes the secondary pathological processes to which sigmoid diverticula are liable as follows: (1) Infection of the general peritoneal cavity from thinning of the sac walls without perforation. (2) Acute or gangrenous inflammation (diverticulitis). (3) Chronic and proliferative inflammation, thickening of the gut wall, and stenosis of the bowel. (4) The formation of adhesions, especially to the small intestine and to the bladder. (5) Perforation of the diverticulum gives rise to (a) general peritonitis; (b) local abscesses; (c) submucous fistulæ of the gut wall; and (d)

fistulous communication with other viscera, especially the bladder. (6) The lodgment of foreign bodies. (7) Chronic mesenteritis of the sigmoid loop. (8) Local chronic peritonitis. (9) Metastatic suppuration. (10) The development of carcinoma. (11) Perforation into a hernial sac. A formidable array of complications. But one case of infection of the general peritoneal cavity as the result of thinning of the sac walls without perforation is noted. That the acute or gangrenous inflammation of the diverticulum may be associated with pain, tenderness, and swelling in the left iliac region is shown by a case reported by Brewer, the cause of the general peritonitis not having been discovered until the time of operation or autopsy.

Telling notes that the most important and characteristic result of multiple diverticulitis is the chronic and proliferative inflammation of the submucous and serous coats resulting from the local absorption of bacterial products. Some degree of thickening was noted in 32 out of the 63 cases. This may be very considerable. The results of this thickening are tumor formation, stenosis with obstructive symptoms, and mimicry of carcinoma. Of all the secondary results this proliferative inflammation is the most important, most frequent, and probably the most overlooked. Moynihan is quoted to the effect that the mimicry of carcinoma may be so perfect that not only is that diagnosis made during life, but at the operation, and is again confirmed by the necropsy. Carcinomatous stenosis is nearly invariably attended with an involvement and ulceration of the mucous membrane, and very frequently with a fungating growth into the lumen of the bowel. The mucous membrane of cases of diverticulitis is free from ulceration, though it may exhibit a fistulous opening or abscess cavity. Its folds are well marked and crowded together, giving it a rugous appearance. These folds often conceal the orifice of the diverticulum. Indeed, with the greatly thickened bowel the orifices become converted into long narrow and often tortuous channels, for the finding of which most careful search is needful.

W. J. Mayo's case is quoted as the only

one of its kind in which correct diagnosis had been suggested before operation. The formation of adhesions to the small intestine may produce acute or chronic obstruction. Adhesions to the bladder were noted. The formation of a fistulous communication between the sigmoid flexure and bladder, either through the diverticular sac or through an intermediate abscess cavity, was noted in eleven cases.

When the diverticulum perforates, according to the acuteness of the ulcerative process, the amount of chronic inflammatory thickening present and the presence of adhesions will be the subsequent symptoms.

The clinical evidences of diverticulitis are expressed in the form of inflammatory trouble more or less acute in the left lower abdomen, left-sided tumor and abscess formation, intestinal obstruction, perforative peritonitis, or vesicocolic fistula. It is clear that theoretically because of the frequently infected contents of the diverticulum the danger of postoperative peritonitis is great, and a number of cases of this complication have occurred and are reported. It has also been proved that a differential diagnosis of a diverticulitis from cancer may be difficult or even impossible at the time of operation, and in many instances a careful macroscopic and even microscopic examination has been needful before the true nature of the condition could be formulated.

As to vesicocolic fistula, Telling's paper seems to show that a very fair number of these cases commonly attributed to cancer may really be regarded as secondary to diverticulitis. In the latter case the radical operation might well be considered. In distinguishing a case of diverticulitis occasioning intestinal obstruction from carcinoma, the affection for which it is usually taken, long-standing constipation, the absence of blood and pus from the stools, and the presence of peridiverticulitis are against cancer. The importance of making a correct diagnosis is incident to the fact that diverticulitis is usually amenable to surgical treatment, and that even when adhesions are formed so extensive as to make complete removal impossible, a colotomy above the seat of obstruction may result in a cure.

REPORTS ON THERAPEUTIC PROGRESS.

THE TREATMENT OF PNEUMONIA IN PRIVATE PRACTICE.

In *Folia Therapeutica* for January, 1908, EWART writes on this topic and asks the question, What remedies are we to employ? To this question there is not any set answer. Since our treatment is not for the pneumonia, let it be for the pneumonic patient. Each case will need its own treatment according to stage, to opportunity, and to individual features. It is for the practitioner, so long as he bears in mind the necessity of restoring the disabled blood function within the first forty-eight hours of the attack, to vary according to his experience the choice of his remedies. His choice must, however, be limited in the first place by the proviso for harmless drugs only, drugs so innocuous as to be safe for babies and the aged; and in the second place by the great indications presented by the early pneumonic state.

In all these cases the aim is (1) to purify the blood even more quickly, if possible, than it is being poisoned, by combining every means of elimination, and particularly diaphoresis, diuresis, and expectoration; (2) to keep the blood and the lymph moving along the vessels even in the congested parts; (3) to further obviate any firm coagulation within the vessels and the alveoli of the lungs by suitable drugs and diet; (4) to assist by every available means the resolution and the absorption of any fibrinous deposits that may have formed in spite of our efforts, or owing to the delay of the treatment; (5) to uphold the energy of the nervous system and of the heart during the "exclusive whey" diet of the first two days by a little gin or brandy, and by *nux vomica* and *digitalis*; (6) to call to aid at the earliest moment the most successful of all our measures of local relief both for the pain and the congestion, the unaccountable but marvelous efficacy of leeches; (7) to feed up the patient after the first two days by the

liberal addition of carbohydrates and fats to the whey, still avoiding the nitrogenous supplies from which fibrin might too readily be formed; (8) lastly, an important addition has only recently been made to the list: the "open-air" treatment recommended by Northrup, of New York, is "the latest specific" available in all cases uncomplicated with bronchitis, and it is not likely to play us false or to be ever given up when once introduced into practice. Yet this is merely a refinement on our approved method of ventilation, with the intangible something added which makes up the undefinable difference between fresh air and open air. So delicate are the influences which may tell upon the course of a pneumonia, though we are taught that all treatment is inert! Whilst we must admit that "open air" stands by itself as *sui generis*, and is not comparable with any other agency, its principle is not altogether novel, and the method was foreshadowed by that of the continuous inhalation of oxygenated or oxonized air advocated on the strength of bacteriological evidence and practiced with favorable results by Dr. George Stoker.

The chief indications may be briefly recapitulated as follows: (1) To deplete locally by leeches; (2) to thin and wash out the blood by the free use of hot whey and hot lemonade; (3) to eliminate, after free relief of the bowels and liver, as much of any noxious principles as the bronchi, the kidneys, and the skin can be made to excrete; (4) to clear and disencumber the blood and lymph circulation in their intercellular and capillary districts, with the help of such drugs as ammonium citrate and of potassium iodide in appropriate doses; (5) to defibrinate the blood by discouraging in every way hyperinosis and coagulation by the citrates and iodide of potassium, and by a fluid non-nitrogenous diet, to be continued until all tendency to consolidation has disappeared.

The extraordinary improvement experi-

enced and manifested by patients, and attested by their temperature chart, after the first few hours of the treatment is among the most gratifying rewards that could be earned by a clinical therapist, and which the author has not failed to obtain in any of the early cases.

TREATMENT OF THE HEART IN TYPHOID.

AIKINS, in the *Canadian Practitioner* for February, 1908, says that treatment of the failing heart in typhoid fever requires almost constant watching and the closest attention to details to ward off an impending end. Local revulsion seems to be useless, and plasters over the cardiac area are often dangerous. A means of revulsion which has apparently proved efficacious is the application of a bag filled with ice on the region of the heart. Where there is a typical myocarditis, a light flannel covering is first placed to avoid immediate contact, and a bag filled with ice is permanently kept on the precordial region. This appears to have a quieting and strengthening action on the heart, and cardiac troubles are often seen to disappear.

Among the different medicines used in the failing heart of typhoid fever, mention must first be made of strychnine, digitalis, caffeine, and ergot. Each of these therapeutic means has its indications, which necessarily vary according to the condition of the patient. Digitalis acts as a cardiovascular stimulant, quickens cardiac contractions, and under its influence one can observe the heart-beats grow stronger, and the pulse become freer and less rapid. Arterial tension is increased. The action of digitalis is not very rapid, and its elimination is slow, and on that account we have seen caffeine succeed better in cases of typhoid myocarditis.

Caffeine is an excellent remedy, in the author's opinion, and has rendered him great service. It can be used by way of the mouth, but it is especially by subcutaneous injections that its effect is most manifest. These injections can be repeated in serious

cases three to four times in twenty-four hours. Under the influence of this drug the heart seems to right itself quickly. At first the action is more rapid, then becomes slower, and the beat becomes more energetic. The action is rather transitory, but when caffeine is given in combination with strychnine one often succeeds in sustaining the heart effectually. The action of alcohol in typhoid fever has been a subject of much discussion for many years indeed, but the author's experience leads him to give it in full doses, continuously watching the patient, and lessening or increasing the quantity of alcohol according to the varying conditions of the patient.

In some cases where the heart is failing as a result of the intensity of toxemia or of loss of blood from intestinal hemorrhage, the author has had the most gratifying results with intestinal injections of the saline solution administered in the pectoral regions.

In one case which he had under observation in the Toronto General Hospital there were in all twenty-eight hemorrhages recorded. By the most energetic use of the saline solution the heart was given sufficient fluid on which to contract, and though the patient during a trying period of ten days was blanched and almost bloodless, recovery ensued.

When the heart appears to be rapidly failing, with increased frequency of pulsation and lessened arterial tension, the application of heat or of the hot-water bag over the heart, as observed by Schott, appears sometimes to restore the needed equilibrium.

CARDIAC FAILURE IN PNEUMONIA.

In acute pneumonia the second cardiac sound over the pulmonary artery is frequently found to be accentuated. This sign is a valuable one, and gives the practitioner an indication as to the condition of the pulmonary circulation. The pulmonary second sound becomes very much less distinct when the right auricle and ventricle become distended, and the right ventricle is unable to completely empty itself. As the right side of the heart becomes

engorged, there is usually found to be an increase of the cardiac dulness to the right of the sternum. "With gradual heart weakness and signs of dilatation, the long pause is greatly shortened, the sounds approach each other in tone, and have a fetal character (embryo-cardia)." Occasionally, as early as the third day in a case of acute lobar pneumonia, there may be a sudden and early collapse of the heart, the pulse becomes rapid and feeble, and there is an increasing cyanosis. For this cardiac failure in acute pneumonia the following may be prescribed:

℞ Tincturæ nucis vomicæ, m. vj;
Tincturæ digitalis, m. v;
Spiritus ether. sulph., m. xij;
Spiritus ammon. aromat., m. xv;
Inf. cinchon., ad ʒj.

Misce. Ft. Mist. Two tablespoonfuls to be taken every six hours.

In some cases the cardiac failure is due to the paralysis of the vasomotor center, which is situated in the lower part of the floor of the fourth ventricle, and there is consequently a general fall of arterial blood-pressure; this is due chiefly to the action of the toxin upon the nerve centers. In this condition the pulse becomes soft and easily compressible, the face is gray, the hands and feet cold, the skin bathed in a cold sweat, and there is a progressive prostration.—*London Practitioner*, January, 1908.

SCOPOLAMINE-MORPHINE ANESTHESIA IN GYNECOLOGY.

In the course of quite a long article with this title in the *American Journal of Obstetrics* for February, 1908, RIES states that advanced age of a patient has formed no contraindication to the use of scopolamine-morphine. The author has operated on twenty-five patients between fifty and seventy years of age. Thirteen had laparotomies alone or combined with vaginal operations. Two of the thirteen had only two-thirds of the dose, two had no inhalation anesthetic. The operations on these thirteen patients lasted from forty-five to eighty minutes. One went through radical operation for hernia, anterior colporrhaphy,

vaginal celiotomy, and colpoperineorrhaphy without any chloroform or ether, though the operations lasted altogether one hour. Others had one, two, and five drachms of chloroform or a little ether. Twelve of these old ladies had only vaginal operations, three without any chloroform or ether, though one of them had in the course of seventy minutes a curettement, operation for vesicovaginal fistula, anterior colporrhaphy, amputation of cervix, and colpoperineorrhaphy, while another one had vaginal hysterectomy and colpoperineorrhaphy.

In the course of a laparotomy it has occurred once among his 185 cases that the respirations went down to three per minute, but as the author was prepared to meet with this condition at some time he did not disturb the patient with a multitude of drugs as some operators have done, who, unacquainted with this possibility, considered it necessary to add strychnine, digitalis, and other drugs to those the patient already contained. In the course of half an hour after the operation his patient's respiration returned to normal, and she proceeded to make an uninterrupted recovery. The pulse of the patients never presented any changes in the course of the operation which were not evidently due to the operation itself. It has been claimed that the hemorrhage from the cutaneous incision was greater under scopolamine-morphine anesthesia than otherwise because scopolamine dilates the vessels of the skin, but the writer has never had the impression of any noticeable difference.

The scopolamine-morphine, when used in combination with ether (fifty-two cases out of the writer's 185), has the great advantage of doing away with the overproduction of mucus in the respiratory passages. The patient's mouth remains dry. This is one of the causes of the almost total absence of lung disturbances after these 185 operations. In the whole series there was not one case of pneumonia and only one slight case of bronchitis. The author does not think, however, that the scopolamine-morphine anesthesia alone is to be thanked therefor; he rather thinks that his method of

after-treatment deserves the credit for this favorable result. The writer here refers particularly to his advice to the patients to assume the erect position, in or out of bed, at the very earliest moment. A slight disadvantage due to the dryness of the mouth produced by the scopolamine-morphine is the intense feeling of thirst of which some patients complain. Usually, however, it is possible to give the patients liberal quantities of liquids by the mouth, as this method of anesthesia largely does away with the postoperative vomiting.

Of the 185 patients, 102 did not vomit at all after the operation; eighty-three vomited more or less; in only one case was there much vomiting in the first twenty-four hours. Of the twenty-four cases which were operated on without chloroform or ether, twenty-two did not vomit at all. Of the two which vomited one had a pelvic abscess for which a colpotomy was performed, and the other had a vaginal hysterectomy for adenomyoma. The proportion of patients who vomited is greater for the combination of chloroform with scopolamine-morphine (60 per cent) than for the combination of ether and scopolamine-morphine (about 36 per cent).

The scopolamine-morphine showed no effect in the postoperative course in regard to action of the bowels or the bladder, or the appetite of the patient, or the healing of the wound.

No deaths in the 185 cases can be attributed to the scopolamine-morphine. The author has had seven deaths among these 185 cases; one death was due to sepsis following criminal abortion where he performed colpotomy for localized peritonitis. The patient died three days after the colpotomy. One case died a few hours after one of the writer's radical operations for carcinoma of the uterus; in this case a tear of the iliac vein, at its bifurcation, occurred in dissecting out adherent glands. The patient succumbed to the loss of blood. Four patients died of peritonitis as follows: One on the fourth day, after an operation for gangrenous, submucous fibroid, double pyosalpinx, and pelvic abscess; one three

days after an abdominal radical operation for carcinoma of the uterus; one two days after an operation for tuberculosis of both ovaries and tubes, tubercular pelvic peritonitis, ileocecal tuberculosis with resection of the ileocecum; one on the sixth day, after an operation for suppurated ovarian dermoid, double pyosalpinx, and ovarian abscess. The seventh patient died three days after operation for a large parasitic fibroid, apparently from pulmonary embolism. All of these patients had good and sufficient causes of death without any chance of the author blaming them on the scopolamine-morphine.

From his experience in gynecological work, he therefore draws the conclusion that scopolamine-morphine anesthesia, with the restrictions mentioned, is of great advantage to the patients as well as to the operator, and that its judicious use can be safely recommended.

A CONSIDERATION OF NEURASTHENIA IN ITS RELATION TO PELVIC SYMPTOMS IN WOMEN.

In the *American Journal of Obstetrics* for February, 1908, WEISS points out that owing to their irritability and sensitiveness, neurasthenics cannot endure the pain and usual discomforts of menstruation as well as their healthier sisters can. They give the impression to their family and physician that the pain is extraordinary, and consequently they are confined to bed during the entire period. Likewise an ordinary vaginal discharge is described as most irritating, offensive, and disagreeable. Undue importance must not, therefore, be attached by the physician to such complaints unless he has personal knowledge of the real condition, for it is then more important to know "what kind of a patient the disease has than to know what disease the patient has."

The question now presents itself, What should be the attitude of the physician in the management and treatment of neurasthenia in its relation to pelvic symptoms? The treatment in general will not be detailed

here. Removal of the cause, of course, whenever discovered is most important, and this may necessitate a change of scene and occupation, freedom from anxiety and worry, improvement of the digestive tract, better elimination, exercise, and in some cases isolation.

The treatment of the local condition comes in now, and it is here that errors are usually made. Too often are neurasthenic pelvic conditions treated by tampons, vaginal douches, and pessaries in the vain hope that relief will result. Where no real trouble exists, of course no cure will result; instead, the patient becomes firmly convinced that her condition is an incurable one, and she soon becomes a patent-medicine fiend and an increasing source of worry and annoyance to all those around her. In young unmarried women is this particularly the case, for the patient is not only unimproved after such a course of treatment, but much moral and physical harm has been done by the indiscriminate use of tampons, pessaries, douches, and needless examinations.

It is quite evident that the surgeon cannot expect to remove by operation the symptoms peculiar to neurasthenia, and it is unnecessary to state that an operation should never be undertaken with the expectation of relieving such patients of their neurasthenia. If the operator removes a fibroid, he does so because it is a pathological condition, and not because its possessor is a neurasthenic. If he operates for appendicitis, the appendix is removed because the actual symptoms of appendicitis are presented. An aching tooth would be extracted in an insane woman, not on account of her insanity, but because her tooth is decayed. In other words, the surgeon should operate for surgical conditions, and not with the expectation of curing neurasthenia.

Gynecologists have been severely criticized by many writers in recent years for attributing too much importance to slight pelvic lesions of the genital organs, and for recommending operations for the relief of many symptoms which unquestionably

should be classed among the neuroses. Due regard is made in this connection of the etiological bearing which pelvic symptoms have in the production of real symptoms, and which are corrected only by operative measures, but this criticism against indiscriminate operations for the relief of neurasthenic symptoms is well merited. Too often are patients with vague neurasthenic symptoms, such as backache or a slight leucorrhea, subjected to a curettement in the hope that a cure will result. Likewise are numberless ovaries sacrificed on account of ovarian pain when no real pathological condition exists. Not only are the neurasthenic symptoms unimproved, but new symptoms are added to the category which did not exist before the operation. Even where the operator is conscientious and well meaning he will frequently operate for the correction of a removable retroposed uterus or cystic ovaries in neurasthenics, with the expectation of relieving the patient of her pelvic symptoms, which in reality are not due to her pelvic organs but to her neurasthenia.

Such patients frequently make the rounds of the different gynecologists, who, in their anxiety to relieve the sufferer, have at different times curetted the uterus, ablated the ovaries, removed the appendix, anchored the kidney, explored the gall-bladder, and possibly operated on the stomach, while the patient still complains of backache and the various pelvic and abdominal pains. Without fearing contradiction it may be stated that every operator with any considerable experience in pelvic surgery has erred in this respect, and instances could be cited of patients coming under his observation who have been operated on at different times for the relief of pelvic pain, without relief, and possibly with the statement that the patient is worse than before her first operation.

From the foregoing remarks we may, therefore, conclude:

1. That neurasthenic pelvic symptoms in women frequently exist without pathological changes in the pelvis.
2. That a careful differentiation between

neurasthenia and real morbid anatomy must be made before deciding on the treatment.

3. That this form of neurasthenia is not only unimproved but frequently aggravated by surgical treatment.

IPECACUANHA IN DYSENTERY.

In the *Military Surgeon* for February, 1908, WOODHULL alludes to the papers in the same journal for January, 1908, which refer to the treatment of dysentery. One detailed five severe amebic cases, all successfully treated by ipecac. The other asserted that the ipecac treatment was nearly always followed by relapse, but praises it as probably curative against the Shiga bacilli and as a valuable adjunct in amebic dysentery. Nowadays a writer is liable to the charge of incompleteness, one may say of imperfect knowledge, if his histories are not substantiated in the laboratory, notwithstanding that the necessity for such confirmation would throw out of court enormous masses of earlier clinical observation. That the dysenteric amebæ and bacilli have been discovered only comparatively recently by no means alters the fact that dysentery in its various forms has been a scourge, chiefly in tropical countries, for untold ages, and has been treated for long periods of time with varying success by different methods. The writer believes it is also a fact that no treatment has been so uniformly successful, regardless of the special cause of the disease, as that by ipecacuanha when the medicine has been properly, which sometimes means persistently, administered.

Valuable as is the science of pathology, much of the art of medicine, especially of therapeutics, has been developed by empiricism, and the practical treatment of dysentery is a part of that empirical progress. The *radix anti-dysenterica* justified its name, until through ignorance it fell into disrepute. Revived as a practical specific by Docker in Bengal, somewhat more than fifty years ago, it rarely fails in any stage, acute or chronic, to ameliorate the symptoms and heal the disease. It is a specific in the sense that quinine is a specific; in

occasional cases each remedy fails. This may seem a bold statement; but ipecac has been ignorantly condemned in the house of its friends. The fact that in health an overdose induces innocent emesis has given it rank as an emetic and has masked the more important fact that, in appropriate disease, it may be given non-emetically in quantities which to the inexperienced would seem enormous. It is probable that the portion of every medicine should be graded by the severity of the case. That is certainly so with ipecac when administered in dysentery, and the writer has seen an old man promptly rescued from apparently impending death, an acute attack immediately cut short in a lady, delicate children relieved, and soldier after soldier cured (if one may use that objectionable word) by ipecac and ipecac alone in quantities appropriate for each.

Since the early seventies dysentery has not worried the writer, if he could control the patient and be sure that the drug was pure. On that account, using Major Raymond's paper as a text, he urges medical officers, in whatever climate or however the dysenteric patient may have been reduced, to administer faithfully and non-emetically large doses of ipecacuanha. It would be miraculous if any human treatment never failed, but the writer has had no personal knowledge of such failure. A comfortable paper for the skeptical to read is Maclean's contribution on Dysentery in Reynolds's System of Medicine. Facts outlast theories, and however antiquated some of the doctrines may appear in the light of modern pathology, the results obtained cannot be disputed.

THE ANTIMICROBIC ACTION OF BROMINE.

KINNAMAN as the result of a series of experiments, reported in the *Journal of the American Medical Association* of February 1, 1908, concludes:

1. In a solution of bromine we have a germicidal agent that presents a peculiar selective action for certain groups of micro-organisms, and then acts more or less in-

differently toward another group. In other words, on cocci and fungi a 1:300 solution is effective in a brief time, thus exhibiting a very marked germicidal action on them. On the other hand, on bacilli, especially spore-forming, the germicidal effect of solutions is disappointing, a one-per-cent solution having to act for a very considerable period of time before death is produced.

2. It differs from an ideal antiseptic in that: (a) It is hard to prepare, being extremely irritating to eyes and mucous membranes. (b) It is very unstable, having to be kept in a glass retainer. Even then it loses its power gradually, hence fresh solutions have to be made frequently. (c) It is not markedly penetrating. (d) It has to act for a considerable period of time to be effective on all microorganisms. (e) It coagulates albumen.

3. It approaches an ideal antiseptic in that: (a) It is non-toxic and non-irritating in a strength that is effective. (b) It does not produce an appreciable stain.

4. Lastly, it is necessary to state that in order to be effective on all classes of microorganisms a one-per-cent solution must be used for the period of one hour.

THE SURGICAL VALUE OF IODINE.

DANNREUTHER, in the *Medical Record* of January 25, 1908, has the following facts to present in favor of iodine as a surgical aid:

The ordinary tincture of iodine is probably more frequently utilized as a counter-irritant for localized uncomplicated inflammations than in any other class of conditions. It is found very satisfactory when applied to the superimposed skin, in simple bursitis, synovitis, tenosynovitis, etc., and it is also used advantageously in similar medical conditions, such as acute pleurisy and sciatica. The skin is lightly painted with the tincture of iodine and allowed to dry. Desquamation will occur in a day or two, and the application may then be repeated if necessary. For these conditions the author has frequently employed a modification of the tincture, viz., Elsberg's solution, which is a 20-per-

cent solution in alcohol and ether, while the tincture is a 7-per-cent alcoholic solution. This will produce the same results as three coats of the ordinary tincture, dries rapidly, and will not soil the clothing. The writer has found this preparation exceedingly valuable in the treatment of lymphangitis (before the formation of pus, of course).

Every hospital interne, especially the house surgeon of a city hospital, has an almost unlimited number of wounds of all descriptions to care for during his service. In the writer's service at the Jersey City Hospital, he had perhaps eight hundred patients with such wounds. We all know what the ordinary scalp wound looks like—laceration, hemorrhage, dirt, hair, and sometimes vermin. And even with thorough cleansing, suture, and gauze dressing (and dusting powders), we find that many of these wounds become infected, and if neglected subsequently the pus may undermine the whole scalp. The writer has made it his practice in all scalp, incised, punctured and lacerated wounds, after thorough shaving, washing with green soap and water, and otherwise procuring cleanliness as nearly as possible, to inject tincture of iodine directly into the wound, with an ordinary medicine dropper. Enough sutures are then introduced to obtain complete coaptation, and a wet gauze dressing applied. It is important that this dressing be kept wet until there is primary union. Every such wound treated in this manner, which has had the proper after-treatment faithfully and conscientiously carried out, has healed by primary union. The author considers this the very best method of procuring sterilization of a dirty wound. A case which has had dirty instruments, etc., used at the second or third dressing we cannot expect to recover in this manner. The writer does not include such conditions as a complete laceration of the thigh, from Poupert's ligament to the knee, where there is a great deal of contusion. Here sloughing naturally occurs, and iodine or any other such agent will not prevent it. It will, however, limit the formation of pus. In such a case free drainage with constant hot

wet dressings is a much better procedure than sutures.

The author has had twelve cases of erysipelas. Each one was treated by painting the eruption and a generous border of the healthy surrounding skin with tincture of iodine, and in no case was there any extension of the erysipelas rash. Of course, appropriate internal medication was used in conjunction.

Iodine will be found useful for stimulating sluggish granulations, such as an indolent ulcer. Apply the pure tincture directly to the granulation tissue. In the treatment of gangrenous ulcers, the direct application of tincture of iodine will limit the extension of the process, hasten sloughing, lessen discharge, and act as a deodorant.

TREATMENT OF WRITER'S CRAMP.

MONELL states in the *Medical Record* of January 18, 1908, that the main indications for treatment are, broadly, two: the elimination of the toxic products which result from high-pressure muscular work and part of which gradually stagnate in the tissues, and the improvement of the nutrition of the affected tissues so that the powers of recuperation are renewed.

The first of these indications is admirably met by means of the modern electric-light radiant-heat cabinet bath, and if this is not available for the practitioner he should advise a course of Turkish baths as the next substitute. The superiority of the radiant-heat bath over the conducted heat bath is, however, demonstrated by many tests which show that it produces nearly double the amount of perspiration in the same length of time, with an increased elimination by the skin and an important stimulation of vital activity. The living tissues are porous to rays of "radiant heat," while conducted heat penetrates more slowly and with less of the effect desired. This elimination must underlie direct treatment to make it satisfactory. Prior to his demonstrations of this in practice the results secured were rapidly obtained only in commencing cases, while

the treatment of the last stage of total disability was tedious and exceedingly difficult.

The measures of direct treatment are comprised in the resources of electrotherapeutics. In employing these resources there are but three requisites to success: a determination of the therapeutic actions which must be set up in the tissues to promote their restoration to normal; the selection of the means of best setting up the desired actions; and the technical knowledge of how to make the selected agent do the therapeutic work that the operator intends it to do.

No special skill, apart from a general command of the resources of modern electrotherapeutics, is therefore required to enable the physician to undertake a case of writer's cramp if he will first acquire an understanding of the conditions to be treated and the indications present in the given case. It is simply the question confronting us in all practice, the question of meeting the indications with the right means. In former days it was the custom to describe mechanical methods as if the prescription for the case was a "method," regardless of individualizing as to dosage, actions, and the fundamentals of medical prescribing—especially of prescribing electric currents. But to-day emphasis need only be laid upon the indications. The practitioner must possess the knowledge acquired by study of how to make each and every "tool" he uses in either surgery or medicine do what he wants to make it do, and if he lacks this rudimentary knowledge he will not undertake an appendectomy, and he ought not to undertake to set up alternative and nutritional actions in diseased tissues. If he does he will deserve to fail of the desired results.

But with this essential fundamental knowledge of physiological actions and how to produce them at will with selected resources of electricity, the practitioner can accomplish much with any of the modern appliances which will give him the means of dose regulation and quality of current action that these cases need. The writer

has variously employed with success all the currents. The galvanic current, currents from fine high-grade faradic coils, the great resources of static electricity, and high-frequency apparatus can all be made to do the work demanded, provided the given apparatus has efficient therapeutic resources and the means of applying them.

In most cases it will be necessary to improve the quality of the blood as well as the circulation through the affected tissues, for anemia, if present, retards the regenerative processes. A "sedative-tonic" action is also indicated to allay irritability and remove aches and pains. Tonic contractions of the affected muscles are always needed, but must be carefully "dosed" to avoid the reactions of fatigue. The physician who is well grounded in the ordinary principles of current-control, actions, and dosage can easily apply his knowledge to the relief and improvement of writer's cramp, and in early cases can rapidly restore the arm to normal endurance and comfort. The mental relief to the patient will be incalculable.

THE USES OF ADRENALIN IN OPHTHALMIC SURGERY.

In the *Journal of the Royal Army Medical Corps* for January, 1908, HULL writes on this topic.

As a therapeutic agent adrenalin owes its importance to its property of acting as a powerful vasoconstrictor, and hence reducing secretions, reducing the amount of the aqueous humor secreted, and reducing the intraocular tension. Knowing the action of adrenalin upon the capillaries and the lymphatics it is possible to discover many affections of the eye in which adrenalin will be of service. Many diseases of the conjunctiva are benefited by its use. In any disease in which conjunctival hyperemia is a prominent feature the instillation of adrenalin is worthy of trial. In purulent ophthalmia and ophthalmia of gonorrheal origin, the instillation of adrenalin may be with advantage combined with the other methods of treatment employed. Catarrhal and granular conjunctivitis are decidedly

benefited by the addition of adrenalin to the usual methods of treatment. The preliminary instillation of adrenalin whilst relieving the pain increases the efficacy of such reagents as protargol, silver nitrate, copper sulphate, zinc sulphate, and cyanide of mercury. In the case of ulcers of the cornea adrenalin is not as a rule indicated, but in the majority of cases of non-suppurative keratitis it may be employed with advantage. The treatment of interstitial keratitis is rendered more satisfactory by the addition of adrenalin to the solution of atropine used for dilating the pupil. It will be remembered how difficult it is in these cases to obtain a reaction to atropine, and how, as a result, posterior synechiæ are often formed. The difficulty is due to the condition of the cornea, which impedes the absorption of the atropine. Adrenalin is of distinct value in the treatment of iritis and iridocyclitis, both on account of its antiphlogistic properties and on account of the increased dilatation of the iris. Although atropine is a remedy which it is customary to find used in almost all cases of inflammation of the eye, its influence upon such cases is more than doubtful, and it would be more scientific to limit the use of atropine to those cases in which the formation of posterior synechiæ is feared. Adrenalin may well replace the use of atropine in many cases of hyperemia.

Adrenalin as a Diagnostic Agent.—The differential diagnosis between iritis and simple conjunctivitis is a frequently recurring question in medicine, and simple as the question may appear, the prescriptions of many practitioners always contain atropine whatever the eye may be affected with. The most valuable distinction between the two conditions is the violet haze around the limbus seen in iritis, which is due to congestion of the deep ciliary vessels. If a good deal of superficial congestion be present (congestion of the conjunctival vessels), it may be somewhat difficult to distinguish the violet haze. The use of adrenalin will make the case clear. Upon instilling a few minims of a 1-in-10,000 solution of adrenalin the conjunctival vessels disappear, leaving a perfectly white conjunctiva, and if

iritis is present the violet haze of the deep vessels will be distinctly seen; later the adrenalin will have had time to act upon the ciliary vessels, and these also will disappear. In this way an early and certain diagnosis of iritis can always be made and the difficulties attending the formation of posterior synechiæ avoided by an early dilatation of the pupil. In a similar manner the diagnoses of diseases of the sclera and conjunctiva are simplified: trachoma granules in a violently inflamed eye will be easily brought into view; patches of episcleritis which would otherwise be overlooked become visible.

The Use of Adrenalin in Operations upon the Eye.—The question has been raised as to the necessity of using adrenalin when performing eye operations. Its use gives a bloodless field for operation and absolute anesthesia. Against this it is urged that secondary hemorrhage is apt to occur as a result of a reaction when the influence of the drug has passed off; moreover, it is argued that its employment is unnecessary, that operations have hitherto been performed without its use with equally good results. These objections cannot be considered to apply to operations upon the adnexa bulbi. With regard to operations on the eyeball, the danger of hemorrhage into the anterior chamber after the operation exists, and some surgeons appear to have been unfortunate as regards this accident. By continuing the instillation of adrenalin after the operation in decreasing doses, the danger of reaction is obviated. Apart from the convenience of a bloodless field the complete anesthesia obtained is in itself an advantage; although it is urged that this is obtained with cocaine alone, it will be found that several text-books mention the sensitiveness of the iris when the eye is cocainized, and point out the danger of the patient flinching when the iris is grasped.

Darier quoted the following experiment in support of his opinion that the administration of adrenalin at the beginning of an iritis may prevent the occurrence of cyclitis: "By means of a stick of silver nitrate we

cauterize the border of the cornea. This violent chemical irritation provokes an intense hyperemia of the ciliary processes, which quickly betrays itself by an abundant albuminous transudation into the anterior chamber. This reaction of the ciliary body can be prevented by injecting $\frac{1}{2}$ to 1 milligramme of adrenalin." Taking advantage of this property the writer has employed the drug in a considerable series of operations on the globe, with the result that the eyes have quieted down more quickly than in the cases in which adrenalin has not been employed, and that any tendency to irritation from the retention of cortical matter in cataract operations has been avoided.

Methods of Application.—In the case of operations, the eye having been cocainized for ten minutes with a five-per-cent solution of cocaine, one or two drops of a 1-in-3000 solution of adrenalin hydrochloride is dropped into the eye. After waiting one minute cocaine is again instilled, and about two minutes later the eye is ready for operation. The action of adrenalin is more intense in some individuals, and in these cases extreme dilatation of the iris may take place, particularly if a strong solution of adrenalin is used, or if the instillation of adrenalin is commenced too long before the operation. When used as a therapeutic agent adrenalin may be with advantage combined with cocaine hydrochloride and cyanide of mercury. Darier recommends the following prescription, which has been extensively employed by the writer:

Hydrochloride of cocaine, 0.10 grain;
Solution of 1-in-1000 adrenalin, 1 grain;
Solution of 1-in-2000 cyanide of mercury,
10 grains.

HOW DO YOU TREAT SEASICKNESS?

O'REILLY gives the following advice in the *New York Medical Journal* of May 30, 1908, in regard to the treatment of this state:

In individuals who know by experience that severe nausea and vomiting are inevitable, a prophylactic injection of 1/100 grain of atropine sulphate combined with

1/50 grain of strychnine sulphate will do much to inhibit its onset. The drug on which the author places the greatest faith is nitroglycerin, in doses of 1/100 grain, the subjective symptoms of depression frequently being ameliorated, even though vomiting persists.

The use of champagne and the sucking of ice may be allowed, although it is doubtful if much value can be attached to their action, beyond the mental impression they produce, and in the same category the author places the use of brown paper over the abdomen and many other similar expedients. Lastly, it may be necessary to relieve thirst with saline injections and employ nutrient enemas to support nutrition.

Turning now to the nervous type of the malady, his advice and procedure as to prophylaxis is similar, but following this a different course of treatment is usually found to be advantageous. Theoretically, the nausea and vomiting being ascribed to a central reflex disturbance (possibly due to an alteration in the normal conditions of the endolymph and perilymph of the semi-circular canals), the etiological factor being the same, treatment of the two forms should be similar.

Experience teaches us that it is here the sedatives are of greatest value, and probably none are more useful than the bromides (given in doses of 20 grains every six hours for at least two days before embarking, preferably the strontium salt), or chloretone in 5-grain capsules or wafers, and repeated every four to six hours (it is officially known as trichlorotertiary butyl alcohol, is a crystalline salt, nearly insoluble in water, volatilizes at low temperatures, and should therefore be kept in glass-stoppered bottles).

HOW TO MANAGE A COUGH WITHOUT DRUGS.

This important subject is discussed by RICHER in the *Journal of the Outdoor Life* for January, 1908. He reminds us that cough begets cough. Cough really is nothing more than a scratching of the throat

to clear it of irritating substances. Itching is an irritating sensation which scratching relieves, yet we would think twice before scratching in public. We know what is said of persons who scratch in public; we are shocked to know that this applies also to those who cough in public. Both can be resisted without great effort by concentration of mind upon some foreign subject, and the exercise of one's will-power.

Why do we cough? Think of the inadvertent bread-crumbs which "has gone the wrong way." The spasmodic cough which follows upon its inhalation instead of its ingestion often persists after the crumb has been expelled by the cough. Why? Because it has left behind it an irritation which constitutes the itching, and the cough does the scratching. Think how quickly we take a drink of water to dislodge, as we imagine, the irritating particle which has already been expelled. What happens as a result of these few swallows of water? We merely give the throat muscles an occupation during the act of swallowing, and devoting our attention to another action in the same neighborhood, we regain control of the situation, and our will-power comes again into play, and thus we are enabled to check the spasms of cough.

When there exists any diseased condition of the lungs or bronchial tubes, a secretion, resulting from the inflammation, is being poured into the breathing tubes. Irritation follows, and cough comes to the relief by attempting to expel these secretions that irritate. Thus cough serves a purpose, but only when it accomplishes what it is primarily intended for, clearing the respiratory tract from obstacles the accumulation of which might endanger life.

When should we cough? A well-ordained cough can always be depended upon to do good service. It is well-ordained when it is under perfect control, when you can defer it for one, two, or even three hours. It is quite possible, and only requires sustained effort of will-power. Many people restrain their cough during a meeting or church service. They have taken the trouble to learn how. Coughing.

like scratching, should be done in private. Whether we cough in public or private, always hold something before the mouth.

We have seen that cough has a special mission to perform, which, when once accomplished, makes of this act (coughing) a useless and even dangerous pastime. The cough that brings up nothing must be repressed. By dint of will-power it can be done.

How to Check the Cough.—Fix the mind upon some pleasant thought.

Take a deep breath very slowly, holding the breath for five to ten seconds.

Take a moderately deep breath, exhale slowly, with a partial attempt at forced expiration.

Try a forced expiration alone.

Take a few sips of water or milk, preferably hot.

The morning cough is much helped by taking a cupful of hot water upon waking.

Avoid unnecessary talking.

Avoid hearty and sustained laughter.

Avoid dusty and smoky rooms.

Don't smoke yourself.

If you lead the outdoor life, the above methods of controlling cough will be materially enhanced.

There are coughs which will yield to the above simple means of control, but there are coughs that will not. Among the latter may be mentioned the coughs resulting from ulcers in the upper windpipe, and chronic inflammation of the upper throat and pharynx, which requires special treatment. Cough has been known to be produced by existing irritation or inflammation in the nose, ear, stomach, liver, spleen, bowels, etc.; these are termed "reflex" or "sympathetic" coughs.

THE IMPORTANCE OF THE EARLY RECOGNITION AND TREATMENT OF RACHITIS.

SOUTHWORTH says in the *Journal of the American Medical Association* of January 11, 1908, that after the fifth or sixth month, when the rachitic element tends to reveal itself more distinctly, certain measures become of definite value. It is a mooted point

whether general tenderness of the body belongs to the symptomatology of rickets or denotes a tendency to scorbutus, but fresh orange juice, which has such a signal effect on scorbutus, has also a beneficial influence on the rachitic infant. At this period or even earlier we may also begin the administration of pure cod-liver oil, at first in small quantities and increased with tolerance to half a drachm or more three times a day. If not well borne, and especially in warm weather, pure olive oil has considerable value as a substitute. More than usual attention should be given to securing the ingestion and digestion of an adequate quantity of proteid, and usually by the seventh month, if need be, and assuredly in the later months of the year, this may be assisted by the administration once daily of beef juice or the white of one egg, the latter incorporated with the contents of one of the bottles.

In undertaking the treatment of older children who have entered on their second year, scraped rare meat pulp may be given at once, and soft-boiled eggs are of important assistance in making up for previous proteid deficiencies in the diet.

The management of the starch-containing foods in these older patients requires especial care, but also an intelligent differentiation of conditions. That advanced rachitic cases often show starchy indigestion is notorious. This is, indeed, truer in proportion to the degree to which the starches have been undercooked or given in excessive quantities to the exclusion of animal proteids. The more marked cases are those children with distended abdomens and foul, undigested stools whose condition has been aggravated by insufficiently cooked cereals, potato, or an excess of bread in their diet. Oatmeal and potato are better interdicted entirely in such cases, and other starchy foods if given should be limited to a small amount of thoroughly cooked and strained cereal of some other kind, or to zwieback, or stale bread dried to a crisp in the oven. Total exclusion of starchy food is by no means always necessary. Cereal additions to milk make avail-

able a considerable amount of vegetable proteid and mineral matter which are craved and promptly assimilated by the underfed organism of certain rachitics. There surely is no contraindication to the judicious use of suitably prepared starchy food when any considerable degree of intestinal indigestion and distention is lacking.

Of the more distinctly medicinal measures the use of cod-liver oil has already been alluded to. Its use for long periods is certainly of great value. When an adequate amount of fat is lacking in the food, as in feeding with condensed milk, it may, within limits, act both as a prophylactic and curative measure. It is also valuable under other conditions in the subacute bronchitis to which rachitic patients are so liable. It is also the test of all mediums for the administration of phosphorus.

Recently in reëntering on his yearly term of service in one of the children's hospitals, the author's attention was directed to an evidently rachitic youngster who was in bed because he was unable to walk. Inquiry elicited the information that he was an Italian aged 28½ months. When admitted to the hospital four and a half months previously he had seven upper and six lower teeth, but despite treatment with tonics, phosphates, and good diet, he had shown no inclination to walk and had cut no other teeth. The author's suggestion that phosphorus be given him elicited the perfectly frank statement from the house physician that he supposed that the phosphorus treatment of rachitis had been long since "exploded" and discarded. Receiving, however, 1/200 grain of phosphorus in 30 minims of cod-liver oil thrice daily, the child stood on his feet in less than two weeks, walked with assistance in twenty-one days, and just one month from the beginning of treatment walked alone and was cutting three additional teeth. These prompt results, which the author had confidently expected, made a convert of the house physician. The opinion voiced by him at first, and which has been gaining ground in recent years owing to the posi-

tion taken by some of the foremost writers on pediatrics, seems to the writer an unfortunate one and detrimental to the best interests of many rachitic children, inasmuch as he finds phosphorus to be the agent which can be relied on to cut short most promptly the more acute symptoms of the rachitic process.

FETID BREATH ("BROMOPNEA").

In the *Medical Record* of January 11, 1908, LEDERER says that in treating bromopnea all the etiological factors leading to this symptom must be considered. A careful examination of the mouth should be made and the teeth looked after, as carious cavities not only afford lodgment to food residue, which may be responsible for the fetor, but gangrenous pulps are frequently the cause of offensive odors. The teeth, however, are more often considered the cause of bromopnea than they actually deserve to be. The teeth should receive proper treatment at the hands of the dentist, and if they are the cause of the symptom the bromopnea will speedily disappear at the completion of the dental treatment. If the teeth are in normal condition and properly cleansed, the gums should be carefully examined, as every form of gingivitis is accompanied by a more or less marked fetid breath, whether the inflammation is a simple ulitis or pyorrhea alveolaris. In mild forms of gingivitis chlorate of potassium or thymol and benzoic acid will act very happily.

R Thymol, 0.25;
Ac. benzoic, 3.0;
Tr. eucalypt., 15.0;
Alcoholis, 100.0;
Ol. menth. pip., 1.0.

M. S.: A teaspoonful in a glass of water four times a day as mouth-wash (Miller).

If the gums are spongy and there is supuration, the writer has had very gratifying results with liq. aluminæ acet., well diluted, as a mouth-wash. Permanganate of potassium is useful as a deodorizer, but this gives, of course, only temporary relief. Some recommend chlorine compounds, such as:

℞ Liq. chlori,
Mellis, āā 15.0;
Aq. dest., 300.0.
M. S.: Use as gargle.

The gingivitis present, however, must be treated and a strict regimen of oral hygiene observed, also the teeth cleansed, and every trace of salivary calculus carefully removed and the oral cavity kept alkaline by the use of bicarbonate of sodium or hydrated magnesia locally. An alkaline saponaceous tooth powder should be employed, one which contains no gritty substances like pumice, or acid materials like salicylic acid. It is difficult to recommend any of the preparations on the market, as no one but the manufacturer knows what they really contain. The writer finds the following very useful:

℞ Saccharini, 0.12;
Cretæ præcip. pulv., 30.0;
Rad. irid. flor. pulv.,
Saponis pulv.,
Sodii bicarb., āā 8.0;
Acid. boricæ, 4.0;
Ol. gaultheriæ,
Ol. menth. pip., āā gtt. x.

Any suppurative condition, as parulis or necrosis of the maxillæ, will give rise to fetor, but these conditions are evident, and are only mentioned for the sake of completeness of the subject.

If any artificial teeth are worn, plates or bridges, stationary or removable, scrupulous cleanliness is necessary to keep the breath pure. It seems superfluous to mention these facts, but the writer has seen a number of cases of foul breath in people with edentulous jaws wearing well-fitting appliances, and the cause of the fetor was not discovered till they were told to remove their artificial teeth and the palatal surface was found covered with a thick, slimy coating of mucus and food residue; they had not taken out the plates for a period ranging from a week to a month, "as they fitted so well and gave no trouble." Sometimes artificial appliances are inserted over old roots, a most abominable practice, as these stumps fill up with food and mucus, producing a terrible stench.

A great deal could be written about in-

flammatory conditions of the mouth accompanied by bromopnea, as all the various types of stomatitis are productive of fetor; however, the treatment of these conditions, supplemented by mild cathartics, the free ingestion of water, and proper exercise will speedily terminate the disease and its objectionable symptom.

If the mouth does not reveal any condition which can be responsible for the fetor, the anterior and posterior nares, nasopharynx, tonsils, and larynx, as well as the various sinuses, should be examined, since diseases of any of these structures frequently produce bromopnea. Tonsillar crypts filled with secretions, cast-off epithelium, and food residue should be sought for, as the stagnating materials may give rise to angina tonsillaris, which is accompanied by a most repelling odor. Sometimes inflamed conditions of the mucosa of the upper air-passages will produce no other symptom than bromopnea, and here a nasal douche of physiological saline solution will act very beneficially. Indeed, the internal nasal bath, the snuffing up of lukewarm water, so that it runs into the mouth, as an adjunct to the daily toilet, is underestimated as a prophylactic measure. If any of these conditions are recognized, the patient in receiving medical treatment will of course get rid of the accompanying fetor. Sometimes, however, as in angina tonsillaris, the patient has not always acute pain, and the only symptom apparent is the bromopnea; therefore all these conditions should be borne in mind.

Diseases of the respiratory apparatus often entail fetor, and besides the routine medicinal treatment, the use of a deodorant will enable us to mask the odor till reparative processes set in. Permanganate of potassium is very useful in these conditions. The author strongly advises against the use of many of the deodorizing, perfumed troches and lozenges, as their preparation and ingredients are secret, and many of them, if used continually, will induce gastric disturbances. A pleasant deodorizing pellet which, if slowly dissolved in the mouth, will mask bromopnea is composed

of thymol, menthol, eucalyptol, vanillin, and saccharin, of each 0.0001. This pellet is used extensively in Europe, but the writer prefers permanganate of potassium, though it is not so pleasant.

STUDIES OF THE HYPNOTIC ACTION OF THE VALERIANIC ACID GROUP.

Recently a new hypnotic has been introduced under the name "bromural," the chemical composition of which is indicated by the term "monobrom-isovalerianyl-urea." It is a white, crystalline powder of slightly bitter taste, sparingly soluble in cold water, more readily soluble in warm water, ether, alcohol, oil, and alkaline liquids. It has a slight odor of valerianic acid. In order to prove the harmless properties of this preparation, A. V. D. ЕЕЧ-НОВ (Arch. f. exper. Path. u. Pharm., 1907, lvii, 338) has performed a series of experiments in animals. In frogs, rabbits, and dogs the therapeutic dose of bromural proved itself to be a pure hypnotic, without any secondary injurious action upon the circulation or respiration. The normal dose is 0.2 to 0.3 gramme per kilogramme body weight; a dose of 1 gramme per kilo is sometimes fatal. The therapeutic dose exerts a selective influence upon the cerebrum, leaving the medulla and spinal cords unaffected, and producing no irritative symptoms. A slowing of the respiratory movements is compensated for by an increase in their depth, thus effecting no change in the amount of air respired. Larger doses, however, diminish considerably both the frequency and the extent of the respiratory movements, but recovery is possible even after a dose of 1 gramme per kilo. The circulation is in no way affected even by the largest doses of bromural, which thus differs from all other halogen-containing narcotics of the fatty acid series (chloroform, chloral hydrate, etc.). The drug appears to have no cumulative action in animals, and is non-irritating to the gastrointestinal tract.

The author has also compared the action of monobrom-isovalerianyl-urea with other

derivatives of valerianic acid. These experiments were performed on small fish, the method consisting in a determination of the degree of molecular concentration of the drug in the surrounding water necessary to produce narcosis. The solutions were regarded as narcotic when the fish assumed a dorsal position and showed no active movement. It was thus demonstrated that the substitution of the halogens in the isovalerianyl-urea derivatives considerably increased their narcotic power, a fact which is well known in connection with the pharmacologic group of the alcohols and chloroform. The urea combinations of the valerianic acids were found more active than the amide combinations. Various combinations of the valerianic acids were more powerful than similar combinations of the butyric acids. The latter, in addition to their narcotic action, exhibited marked poisonous properties. The iodine substitution product was found to have no narcotic action in warm-blooded animals, owing to the rapid separation of the iodine, leaving the almost inactive isovalerianyl-urea. The relative activity of the various substances in rabbits and dogs is seen in the following table:

<i>Narcotic:</i>	Brom-isovalerianyl-urea. Chlor-isovalerianyl-urea. Methyl-ethyl-brown-acetyl-urea.
<i>Narcotic and toxic:</i>	Brom-isovalerianic acid-amide.
<i>Toxic:</i>	Iod-isovalerianyl-urea. Brom-butyryl-urea. Brom-butyric acid-amide.
<i>Inactive:</i>	Brom-valerianyl-urea. Isovalerianyl-urea. Brom-isobutyryl-urea. Brom-isobutyric acid-amide.

These results differ somewhat from those obtained in fish, probably owing to different temperature conditions.

THE CAUSE OF STRYCHNINE PARALYSIS.

It has been generally accepted that strychnine, besides its well-known excitation of the spinal cord, exerts a depressing influence on certain centers, especially on those controlling the vascular nervous supply, and that this latter effect is the cause

of death in strychnine poisoning. Verworn has recently shown, however, that the general paralysis and consequent fatal termination, occurring in this condition, is due to a depression of the circulation caused by direct paralysis of the heart. Igersheim has demonstrated that there are small doses of the drug which, immediately after the convulsions, will produce a paralysis that is not dependent upon the heart's action, as the latter is very little affected by these doses. In fact, a slight slowing of the pulse is more than compensated by an increase in pulse volume. Nevertheless, it is still possible that a paralysis of the blood-vessels might so lower the blood-pressure, in spite of a well-preserved cardiac activity, that the circulation in the central nervous system is insufficient for its functioning purposes.

C. JACOBY (*Arch. f. exper. Path. u. Pharm.*, 1907, lvii, 399) has investigated this last question by a determination of the blood-pressure in frogs, poisoned by various doses of strychnine. A normal dose—i.e., 1/140 milligramme per gramme body weight—had little effect on the blood-pressure. Larger doses caused an appreciable depression of the blood-pressure, the extent of which seemed in direct proportion to the duration of the tetanic stage. In this case it is possible that the fall of blood-pressure was due not to the strychnine, but to the circulation of a blood rich in metabolic products and poor in oxygen. The question of a vitiated blood supply to the nerve centers enters especially into those experiments where paralysis was caused without appreciable depression of the blood-pressure on the heart. In order to settle this question a series of experiments was instituted, in which a well-oxygenated blood was artificially forced through the circulation, under normal conditions of pulse and blood-pressure. It was found that blood containing strychnine produced the general paralysis, even though a fresh supply of such blood was constantly being forced through the vessels, thus eliminating the influence of metabolic products. It was thus evident that the strychnine

alone can be held responsible for the paralytic phenomena. The strychnine was also found to cause a dilatation of the vascular system and a consequent increase in the amount of blood passing through it.

All of these experiments confirm Schmiedeberg's opinion, that strychnine exerts in the frog a specific paralytic effect upon the nervous centers, and that there is no primary depressing action on the circulation if the dose is not excessive. The fall of blood-pressure after larger doses, which do not yet depress the heart, is also due to the action of the drug upon the nerve centers, specifically upon those governing the vascular nerves. Only in very large doses does strychnine produce a primary paralysis of the heart muscle.

PERMANENT INCREASE OF BLOOD-PRESSURE FROM ADRENALIN AND ITS MECHANISM.

The constant presence of adrenalin in the circulating blood has been demonstrated by several investigators and by various methods. That this internal secretion has an influence upon vasomotor tone and blood-pressure cannot be doubted. But the question arises whether adrenalin acts continuously upon the blood-vessels or only acts as a regulator of vascular pressure. W. KRETSCHNER (*Arch. f. exper. Path. u. Pharm.*, 1907, lvii, 423) has attempted to solve this problem by a series of experiments. It has been shown that, for certain alkaloids of which muscarin is the type, there is a certain saturation point for the cells affected—that is, the affected cells exhibit certain phenomena only during absorption of the poison, and after a chemical balance has been established between the cells and the poison the continued introduction of the alkaloid into the animal body will have no additional effect. Kretschner shows that successive injections of a certain fixed quantity of adrenalin will always produce the same change in blood-pressure, no matter how often the injections are repeated. Likewise, the increase in blood-pressure will always be directly proportion-

ate to the quantity of adrenalin used. A permanent rise of blood-pressure cannot, however, be produced by the interrupted application (*i.e.*, successive injections) of adrenalin, no matter how large the dose. There is, therefore, no saturation point for adrenalin, which thus differs from muscarin and similar alkaloids. A permanent effect on the blood-pressure can only be produced by the continuous action of adrenalin, as occurs in the continuous secretion of the suprarenal glands. This action can be simulated in experimental animals by means of apparatus which it is hardly necessary to describe. Kretschner found by such experiments that the increase in blood-pressure is in proportion to the rapidity with which the adrenalin solution is supplied to the circulation. There is, however, an upper limit (0.00002 gramme adrenalin per minute for rabbits), beyond which a greater supply of adrenalin fails to produce a further rise in the pressure. The maximum increase in blood-pressure is 75 to 100 per cent beyond normal. Within these limits it was found that the blood-pressure could be changed at will by altering the rate at which the adrenalin was supplied. After interruption of the supply the blood-pressure returns to normal, but the duration of the after-effects is approximately proportional to the amount of adrenalin still in the circulation at the time of interruption.

Certain deductions may be made from these experiments as to the probable mechanism of the action of adrenalin. This substance acts like an "irritative poison," its effects being due to a difference in concentration between the blood and the cell protoplasm, with which it comes in contact. As there is no point of saturation, it seems evident that the adrenalin must be constantly undergoing a process of destruction within the cells. In favor of this view is the well-known susceptibility of the adrenalin molecule to oxidation, especially in an alkaline medium. The supposition of a rapid destruction of the adrenalin within the cells will also explain the duration of its action after the supply has been cut off,

the action continuing as long as there is any adrenalin remaining in the blood. These results of pharmacologic experimentation with adrenalin correspond so closely with the conditions of internal secretion as found within the animal body, that it is permissible to draw certain conclusions concerning the physiologic rôle of the suprarenal glands in the organism. It seems evident that adrenalin plays an important part in the maintenance of vascular tone. Although it is not the only factor concerned, still it is probable that the principal task of adrenalin consists in determining the general vasomotor tone, while the sympathetic system regulates the local and temporary changes in blood-pressure.

In another short communication (*Arch. f. exper. Path. u. Pharm.*, 1907, lvii, 438) Kretschner has investigated the effects of alkaline and acid media upon the destruction of adrenalin within the organism. The best way to observe this influence is by a determination of the time consumed by the blood-pressure in returning to normal, after the supply of adrenalin is cut off (called the "return period"). The alkalinity of the blood in these experiments was reduced by the introduction of certain quantities of a 1:100,000 solution of hydrochloric acid. It was found that a reduction of alkalinity lengthened the "return period" many times. In other words, after the supply of adrenalin to the blood was cut off, a diminution in the alkalinity of that fluid greatly lessened the rapidity with which the remaining adrenalin was destroyed, and thereby lengthened the duration of its after-effects.

CUTANEOUS TUBERCULIN VACCINATION IN THE DIAGNOSIS OF TUBERCULOSIS.

BUTLER in the *Medical Record* of February 1, 1908, tells us that the technique for making a cutaneous vaccination with tuberculin is as follows: Make a 25-per-cent solution of old tuberculin in salt solution. A similar dilution is used in which one volume of a 5-per-cent solution of carbolic acid in glycerin is substituted for one

of the volumes of salt solution. Place two drops, one of each solution, separated from each other by a space of two inches, on the outside of the arm, which should be prepared as is customary for vaccination. A small lancet with a dull tip, which is about one-sixteenth of an inch wide and placed vertically in a metal handle, is used to abrade the skin through the vaccine drops by a rotary motion, removing only upper layers of epidermis. The tip is then cleaned, and at a point midway between the vaccination marks a third abrasion is made without any tuberculin being applied, to serve as a control.

If the reaction is positive a papule, varying in size from 5 to 20 millimeters in diameter, at first bright-red, later becoming a dark-red with a slight areola, will appear at either vaccination point in the first twenty-four hours; occasionally they are delayed to the second twenty-four hours. Sometimes little vesicles with turbid contents, later becoming confluent, appear over the inoculation site. These fade and disappear in the course of several days, leaving at times a little pigmentation. In positive cases in which revaccination is practiced similar reactions result. In localized tuberculous processes, as of the glands and bone, the reaction is especially marked in contrast to the milder reaction seen in persons who have healed foci. At the control point, and at all three points, in case the reaction is negative, the slight reddening that follows the scarification disappears in twenty-four hours without any further changes.

As a rule there are no constitutional symptoms following its use, and the local changes at the point of inoculation clear up in the course of several days. However, Moro has recently reported five cases in which complications arose which he was prone to attribute to the tuberculin reaction. In two a rhinitis developed in six to ten days. In three a conjunctivitis phlyctenulosa appeared, in one only for the first time, the others being recurrent. In another an existing conjunctivitis, Moro thought, was rendered worse. In one a

tuberculide followed at the vaccination point, but had subsided greatly before the patient left the hospital, a month after inoculation.

Since the introduction of this cutaneous tuberculin vaccination, Calmette has devised a unique modification of its application by using the conjunctiva for inoculation instead of the skin. It is termed the ophthalmo-tuberculin reaction. He employs as a vaccine a one-per-cent solution in water of the precipitate obtained by adding alcohol to cultures of typhoid bacilli.

The scope of applicability of the reaction in tuberculosis would seem to be in great part restricted to children, as a large number of apparently healthy adults give the reaction. This, however, might be explained on the basis that a large proportion of adults may have obsolete tuberculous foci or latent bacilli somewhere in the body.

As this is solely a diagnostic test, it is quite evident that the most convincing proof of its value will have to come from the autopsy room. The author does not, therefore, cite his own experiences with the test, as they have not been so controlled. Although it has been used very widely in the past several months in Austrian and German clinics, the only comparison of the reaction with post-mortem findings so far has come from Pirquet, who reports (*Wiener klinische. Wochenschrift*, No. 38, 1907) on one hundred persons in whom the tuberculin vaccination was made and who subsequently came to post-mortem.

Many interesting points have revealed themselves through this study. It has been observed that children with apparently healed tuberculous foci, which were found only incidentally post mortem, often failed to give the reaction on first vaccination, but responded on later vaccinations. Here is a point not without some clinical significance in the use of tuberculin vaccination. It might suggest as a conservative proposition the employment of this test only in cases in which tuberculosis is the suspected cause of mischief.

Of thirteen cases in which tuberculosis was an incidental finding at autopsy, in six

the reaction in the first and in three only in a later examination proved positive. It was negative in four, in three of which it was made in the last ten days of life.

Of thirty-four persons dying from tuberculosis, twenty-four were first tested in the last ten days of life. In thirteen of these the reaction failed, in eleven it was positive.

The test would appear to fail frequently in the last ten days of life in cases in which tuberculous processes prove an accidental finding.

In one case that gave a positive reaction the anatomical examination failed to show macroscopic tuberculosis.

Fifty-two cases that gave a negative reaction to the tuberculin test also proved negative as to tuberculosis at autopsy.

The ages of the above varied from a few months to fourteen years; 38 were under one year, 30 of whom were free from tuberculosis; of 33 cases over three years of age, only 6 were free from tuberculosis; of the 29 between one and four years, 13 were tuberculous.

It would appear from these results that a positive reaction in a child is undoubtedly diagnostic of tuberculosis; that failure of the reaction is of little antidiagnostic significance in the terminal days of a tuberculous infection; also that its results in cases of obsolete tuberculous foci might prove negative unless the vaccination was repeated.

A parallel observation with its failure in the last days of fatal tuberculosis is its failure in cachectic children. A deviation from the normal is also observed in vaccinating cachectic children against smallpox, in that there is very little or no hyperemia around the papule, which develops quite normally, but usually reaches its maximum later and likewise its involution. The revaccination gives much later positive results than usual. This may find explanation in diminished response of the organism to antibody production.

All in all, it would seem to be a valuable and practical diagnostic aid in tuberculosis, possessing advantages over the hypodermic use of tuberculin in children to such an extent as not to require comment. That

it has shortcomings, however, is evident from the above statistics, in that it is not absolutely reliable at all stages of the process.

OPERATIONS UNDER LOCAL ANALGESIA.

PORTER states in the *Journal of the Royal Army Medical Corps* for March, 1908, that for many years past he has invariably performed the operation of circumcision under a local analgesic. At first he used a five-per-cent solution of cocaine. Then he found that the procedure could be carried out quite satisfactorily under a one-per-cent solution. For the last eighteen months he has used eucaine and adrenalin.

In all the cases done under cocaine, and the earlier ones under eucaine, the fluid was introduced at the proposed line of incision through the skin. This incision was invariably quite painless, but the trimming up of the mucous membrane was usually more or less painful, as was also the introduction of the stitches.

He then tried injecting the mucous membrane at its attachment near the corona, and in every case where this was possible the operation could be guaranteed to be absolutely painless. Three or four insertions of the needle were, however, necessary to do this part of the injection properly. In a considerable number of cases the mucous membrane is enormously thickened, and retraction is impossible. In these he tried, by pushing the needle deeply into the mucous membrane, to flood it with the solution. In a number of cases this maneuver acted satisfactorily, but there was no absolute certainty about it. Lately he has tried injecting the subcutaneous tissue of the penis as close to the symphysis as possible. The loose tissue is picked up between the finger and thumb, and the needle is inserted at right angles to the long axis of the organ. About 15 cubic centimeters of Barker's solution is injected, and by rotating the penis to meet the needle-point it is possible to inject half its circumference. Not less than 30 cubic centimeters should

be used altogether. The operation should not be commenced for at least half an hour. Every case he has done by this method has been absolutely painless.

The writer is quite aware that there is really nothing new in the method he is advocating, for one is only carrying out the fundamental principle which underlies all local analgesia, produced by the injection of various drugs, viz., that certain substances applied to the branch of a nerve suspend its sensory functions over its whole distribution for a considerable time (vide Barker's paper, vol. ix, p. 115, *Journal of the Royal Army Medical Corps*).

The main advantages which seem to exist over the older methods are: (1) The absolute certainty of rendering the whole of the skin and mucous membrane analgesic; (2) the possibility of introducing the injection through one needle puncture; (3) the fact that the skin near the symphysis is much less sensitive than that near the end of the organ, especially when there is inflammation present; (4) there is no edema at the site of operation; (5) there is (thanks to the adrenalin) no hemorrhage requiring a ligature—the continuous suture and gauze pressure is quite sufficient for this.

The operations for ingrowing toe-nails and for hammer-toe, which the author has described in previous volumes of the *Journal of the Royal Army Medical Corps*, can be performed more satisfactorily by introducing the eucaine solution near the web so as to act on the nerve trunks. In the former operation it need only be injected into one side, but in the latter it is necessary to inject both sides of the toe. A comparatively large quantity should be used, and the operation should not be commenced for at least twenty minutes.

By making use of catgut sutures to obliterate the deeper parts of operation wounds, such as those of radical cases of hernia or varicocele, one is able to dispense with the drainage which one used to consider necessary in order to get rid of the excessive serous discharge which is poured out when the effects of the adrenalin have passed off.

THE ACTIONS AND USES OF SALICYLIC ACID AND ITS PREPARATIONS, WITH SPECIAL REFERENCE TO RHEUMATISM.

In the *Calcutta Medical Journal* for February, 1908, GHOSH makes a few observations on the salicylates as antipyretics and hepatic stimulants. He asserts there are few drugs in the Pharmacopœia which can excel sodium salicylate in its action on the liver. It stimulates the latter to increased activity, causing an increase in the flow of bile, which is rendered more watery and is at the same time excreted under a higher pressure. In ordinary fever with some hepatic derangement and congestion, it has invariably been used with the customary diaphoretic mixture, with good results. Moreover, the general discomfort and the indefinite sort of pain over the whole body, so often complained of by such patients, are as a rule relieved by this drug. Salicin is also a valuable remedy in some forms of fever, especially in those who have a rheumatic taint. In malarial fever, after the acute paroxysms are checked by quinine, it is sometimes observed that a slow form of fever persists not amenable to this drug. In such cases a combination of quinine and salicin yields better results.

In a few selected cases of infantile biliary cirrhosis, continued use of salicin along with ipecac, euonymin, and rhubarb has been attended with much success; but how it has acted the writer is not in a position to explain at present, unless some more light is thrown on the real pathology of this disease. As to whether it is the increased fluidity of the bile, or excretion of more solid and increased activity of the organ, that helps to reduce its size, or some other action leading to such good results, he leaves to some future observers to determine. However, he believes it is worth trying in suitable cases.

Considering, therefore, the value of the above drugs, their shortcomings may almost be overlooked. One of the chief objections to their use is that they are powerful depressants. When using the drug in large doses, as in acute rheumatic fever, one

should always use the salt prepared from the oil of gaultheria. This has the advantage of not being depressant and gives better results, as it does not contain any of the impurities of the artificial preparations. When not using the drug in big doses, the synthetic product answers the purpose equally well, and no untoward effects have been observed from its cautious use.

In concluding his paper the author makes some reference to the drug aspirin. This has of late years secured a place in the front rank of antirheumatic remedies. It is equally supplanting salicylic acid and the salicylate, possessing, as it does, the advantages over any of the other drugs in not being an irritant to the stomach and leaving no bad after-effects.

TREATMENT OF THE AORTIC INCOMPETENCE OF LATER LIFE.

In the *Practitioner* for March, 1908, BROADBENT in writing on this topic says that the treatment will vary according to the predominant symptoms.

If uremic symptoms predominate, such as dyspnea, delirium, and restlessness, the administration of mercurial purgatives, mild diuretics, and iodides will be beneficial. Most important of all, however, is a purin-free diet, and an absolute *régime lacté*, as advocated by Huchard, may be advisable in some cases.

If anginoid symptoms are present, the administration of trinitrin, amyl nitrite, sodium nitrite, or other vasodilator will be called for. Morphine given hypodermically will often afford great relief, both in these cases and in the group mentioned above.

The question as to the use of digitalis in aortic incompetence has been much debated. In cases due to degenerative change it is seldom called for, as the blood-pressure is usually high, and the regurgitation considerable. Even when the incompetence appears to be giving rise to cardiac embarrassment, the object of treatment will be rather to relieve the left ventricle, by low-

ering the blood-pressure, than to attempt to stimulate it.

If, however, compensation has completely broken down, and mitral incompetence is present, with engorgement of the lungs and back working, so that the work of compensation falls on the right ventricle, digitalis may sometimes prove of service in stimulating and reënforcing the embarrassed right ventricle, as the right ventricle may be the seat of fibroid change, or be incapable of responding efficiently.

In similar conditions in young subjects, in which incompetence is the result of endocarditis, and secondary mitral symptoms are present, the benefit from digitalis to the right ventricle may be very marked, and efficient compensation be restored for a time, as the heart muscle is usually healthy and responds more readily to stimulation.

The effect of the digitalis will, of course, not be confined to the right ventricle, and its action on the left ventricle may up to a certain point be beneficial in helping to restore it to its previous state of efficiency.

Digitalis should, however, not be employed even in young adults; still less in later life, in aortic incompetence, unless there are mitral symptoms in addition, as described above, as unnecessary stimulation of the left ventricle will only cause a more violent and forcible contraction, which will project the blood into the aorta with greater force, and throw more strain on the vascular system, but will in nowise diminish the amount of regurgitation.

OPHTHALMIA NEONATORUM.

MAYOU in the *Practitioner* for March, 1908, says there can be no doubt that the sheet-anchor of the treatment of ophthalmia neonatorum is nitrate of silver. At Moorfields, in cases of any severity, a two-per-cent solution is painted once daily over the lid and fornices. In mild cases, protargol, 10-per-cent solution, can be used as drops at home, if properly instilled. E. Alvarado, in collected results of European surgeons, recommends nitrate of silver in preference to protargol for the majority of cases. In

the intervals the conjunctival sacs should be washed out every hour with a solution of 1 in 8000 of perchloride of mercury. The lotion should be used cold, or even iced, as the cold inhibits the growth of the gonococcus, and at the same time prevents excessive swelling of the lids. In painting, wool mops on the end of glass rods, which should subsequently be carefully sterilized, are used. The nitrate of silver should be rubbed into the conjunctiva of the tarsus and fornix, so that the drug may reach the bottom of the papillæ, which are very marked in the gonococcal form of the disease, but the greatest care should be taken not to damage the corneal epithelium. The excess of silver should be neutralized with salt solution. A supply of wool should be given to the nurse to wash away the discharge from the patient's eyes, and to burn directly after use. The nurse should be warned against the risks of infection, and the greatest care should be taken whilst washing the child, the head being washed separately, and all towels, sponges, etc., for its use kept separate. Protective glasses should be worn by the nurse and the surgeon examining the case, as when the eyelids are separated discharge will often spurt some distance from between the lids. If only one eye is affected, the greatest care should be taken to prevent the infection of the other. The sound eye should be covered by a Buller's shield, or better perhaps in infants, by a cyanide gauze sealed down on the nasal side by flexible collodion or strapping. It should be inspected for the first few days to see that the infection has not taken place. The treatment should be continued with the lotion for at least a month after all the discharge has ceased, since the gonococcus has been found by Groenouw twenty-eight days after the discharge has subsided. It must also, therefore, be treated as infectious during this period. According to Axenfeld, the papillary hypertrophy, which is so marked, disappears entirely, leaving nothing from which it can be said that the child has had ophthalmia neonatorum. Stephenson does not agree with this view.

The duration of treatment varies considerably according to whether the case is severe or mild. If mild, the case is usually free from discharge by the end of the second week of treatment; if severe, the average duration of treatment in 200 cases investigated was six weeks.

A REVIEW OF SOME RECENT WORK ON GOUT.

The *Practitioner* for March, 1908, contains an article by SIKES on this topic. He points out that recent discussions on the use of chloride of sodium in gout are chiefly founded on the work of Widal and others on the rôle of common salt in the general metabolism in health and disease.

There has been, and still is, a great deal of divergence of opinion on the influence of this salt in gouty states, and the matter reminds us of the history of the various laboratory solvents for uric acid, which are so often recommended to us, but which very seldom act in the expected manner, when introduced into the system.

It is certain that spas containing a notable quantity of chloride of sodium have a deserved reputation for the treatment of gouty conditions, and yet, from theoretical considerations, it has been suggested that they ought to be harmful, on the assumption that in gout the kidneys are not functioning properly, and also that sodium chloride is liable to increase the tendency to the precipitation of biurate in the system.

With reference to the former point, it is an open question to what extent the kidneys are involved in the earlier stages of gout. It is quite probable that the retention of products within the system is due to new chemical compounds, with which the normal kidney is not fitted to deal.

In those cases in which there is obviously disease of the kidney and heart, and especially when associated with edema, theory and practice agree in condemning waters which contain more than traces of sodium chloride.

In cases also in which there is a tendency to acute attacks, or in which there is much

urate in the system, waters containing sodium chloride are held to be contraindicated.

But in the many cases in which the goutiness is more of a chronic nature, and especially in the many forms of irregular gout, these waters are generally admitted to be very useful, and here the beneficial effects seem to be partly due to their action on the digestive organs and the liver.

The treatment of chronic gouty conditions by physical methods, whether articular or affecting other parts of the body, has advanced very considerably in recent years. The use of drugs for these states, unless persisted in for some time, is usually disappointing.

Treatment, founded on the combination of massage, exercises, radiant heat, and electricity, will usually greatly improve one of these cases in three or four weeks.

Take, for example, a chronic case of gouty neuritis. There is no drug which is really useful, while with the above methods we can always promise alleviation at least, and improvement goes on for some time after the cessation of the treatment.

The results are better when undertaken at some spa, where the drinking of water and the necessary dieting can be supervised.

The writer doubts if many of the English spas are fitted up as well as they might be for physical treatment. It is only recently, and with a few, that any attempt has been made to supplement their resources with the "fango" or mud treatment, as practiced in Italy, Germany, and at Larvik, amongst other places, in Norway. The composition of the brine used to mix the mud is different at all the places where this treatment is used, and to an observer of results this seems to indicate that the chief therapeutic agent is the continued direct heat, and to a certain extent the counter-irritant effect.

As it is usually necessary to combine the various physical agents mentioned, for the simple reason that it is best for the relief of the ailment, it is often difficult to say what influence each factor has in the good result. It is seldom that two cases

can be treated similarly, and it is hardly necessary to add that every case, when treated by physical methods, should be under the direct supervision of a medical man.

The general tendency to be noticed in recent articles is the recommendation of a simple mixed diet for the average case; also it is now customary to modify the diet more to suit the individual digestion than to prescribe one which is free from this or that chemical element, as, for example, the quantity of purin. In average cases meat is not contraindicated, but the amount should be restricted to one meal in the day. It is usual also to consider the carbohydrate element of the food and its effect on the liver as of more importance than was formerly the case. Hence it is advisable to reduce the amount of carbohydrate which is taken in the comparatively pure form, such as potatoes, rice, etc.

If we wish the digestion to proceed as normally as possible, and to avoid the absorption of imperfectly elaborated products, it is only rational to prevent the undue dilution of the gastric juice, hence liquids, during meals, should be restricted as much as possible.

Simple meals, limitation of carbohydrate, restriction of alcohol, and the drinking of non-alcoholic fluids between meals are the chief points to be remembered. Vegetarianism, fruitarianism, and even zomotherapy may suit a few, but they do not seriously concern us when discussing the general conditions of a gouty diet.

DISLOCATION FRACTURES OF THE OS NAVICULARIS PEDIS AND THEIR RESULTS.

DEUTSCHLANDER (*Archiv für klinische Chirurgie*, Bd. lxxxiii, H. 1) says that dislocation fracture of the navicular bone of the foot is referred to in the latest books as a rarity. He has, however, lately paid great attention to the injuries to the ankle, and has been able to establish a diagnosis of this lesion in five cases by the aid of the Röntgen rays. The trauma which caused

the lesion was quite variable. In three of the cases (young girls) it was trivial, and was due to slight distortion—in one case to breaking down of the foot upon even ground, in another to a breaking down in dancing, and in the third to a slipping of the foot over two stair-steps. In the two remaining cases it happened as a result of marked violence: in the one case a coachman jumped from the box of a furniture van upon the anterior part of his foot, and in the other a heavy piece of iron fell upon the instep of a locksmith. In none of these cases did the direct signs of fracture appear. The diagnosis was possible only by means of the *x*-ray. But in these difficulties often arise, because since one does not suspect a fracture in these cases of slight trauma he does not take occasion to make an *x*-ray.

The injury is brought about by forcible motion and torsion of the midtarsal joint in such a way that the dorsal part of the navicular bone is pried away from the head of the astragalus while the plantar part of the bone is pressed tight against the astragalus. The body weight is thrown upon the neck of the astragalus, as it always is in the extreme plantar flexion of the foot. Thus a fracture can be produced, as the plantar part of the bone is the weakest part. Also in direct violence, as when a heavy object falls upon the instep, the mechanism of the injury is frequently indirect. For the falling body flattens in the first place the arch of the foot and loosens the bond between the astragalus and navicular bone so that both bones are shoved against each other in such a way that a fracture occurs. At the same time dislocation also occurs. This constitutes the so-called dislocation fracture. The dislocation shows itself chiefly on the inner plantar side of the foot, and clinically renders itself noticeable by a displacement of the navicular bone toward the inner border of the foot. As a rule the dislocation is incomplete; it is seldom shown in the *x*-ray picture. Dislocation in fracture of the navicular is, however, not constant. The dislocation fractures of the navicular bone have a very important practical significance,

for this bone is the keystone of the arch of the foot, and it is an essential constituent part of the very important midtarsal joint. An injury to this bone often results in a severe deforming inflammation of the joint. Thus many cases of flatfoot following slight trauma may be due to old dislocation fracture of the navicular bone.

As to the clinical manifestations, the patient complains chiefly of pain, which is partly on the dorsum of the navicular bone and partly on the sole of the foot at the tuberosity of the navicular bone, radiating along the tendon of the tibialis posticus and in the calf muscles. The foot is stiff; motion in the midtarsal joint is diminished and very painful. The patient quickly becomes tired and lame, feels unsafe on his feet, and often cannot walk more than a quarter of an hour on account of pain in the foot. In contrast to these marked subjective symptoms the objective findings are relatively insignificant. The foot does not show outwardly any marked change, and the arch of the foot is usually well maintained. There is such atrophy of the calf muscles as usually accompanies deforming inflammation of a joint. The explanation of the severe disturbance of function is given only by the *x*-ray.

As to the treatment, conservative measures as a rule prove worthless. Rubbing, massage, movements, hot-air baths, and other physical means give transitory relief but do not produce lasting results. Also treatment by flat-foot apparatus does not do more than improve the condition; it never cures it—at least it did not in the author's cases. For this reason the author in two cases resorted to operation. In one of the cases the displaced navicular bone was resected, and in the other it was completely extirpated and an adduction ankylosis created between the astragalus and the first cuneiform bone. The resection was done four months ago and the extirpation about a year ago, and the results are quite satisfactory. Both patients are completely free from pain and can again walk a long distance. It is likely that if our attention is carefully directed to a close investigation

of marked disturbance of the feet after slight trauma, it will be found that dislocation fracture of the navicular bone is more frequent than the meager literature on the subject discloses.

DEFORMING ARTHRITIS OF THE HIP-JOINT, AND ITS RELATION TO THE ROSER-NÉLATON LINE.

PREISER (*Deutsche Zeitschrift für Chirurgie*, Band lxxxix, Heft 5-6) after an exhaustive study of the subject of deforming arthritis of the hip-joint offers the following conclusions:

In 60 per cent of individuals the trochanter stands above the Roser-Nélaton line. In healthy hips the height of the trochanter varies on both sides of this line within a range of 9 centimeters; a variation of 5 to 6 centimeters is not rare; of 3 to 4 centimeters is very frequent. We cannot in pathological conditions ascribe to the position of the trochanter the same significance in differential diagnosis as hitherto. The Roser-Nélaton line gives us a good conception of the mutual relation to one another of the tuberosity, the center of the acetabulum, and the tip of the trochanter. No anatomical coxa vara is found by the x-ray in the high position of the trochanter in persons with healthy hips; the inclination of the neck of the femur and Alsberg's angle are normal. The elevation of the trochanter in healthy hips is not due to bending of the upper end of the femur, but to some characteristic in the shape of the pelvis, so that the relation of the spine, tuberosity, and acetabulum is altered.

In only about 43 per cent of skeletons does Nélaton's line pass through the center of the acetabulum. In rachitic pelves the acetabulum lies forward in reference to this line and is shallow. For a rachitic individual to carry the foot in a sagittal direction it is necessary for the femur to rotate outward almost 90 degrees. Since in this position only the posterior part of the head of the femur articulates, the pelvis must be strongly inclined forward. This results in the lordosis of rachitis. At the

same time a large part of the cartilaginous surface of the head of the femur is out of articulation.

A third type of pelvis is that in which the acetabulum stands in an oblique lateral-sagittal direction. These pelves approach the funnel shape. The socket is deep. The femur is in marked outward rotation, so that when the foot is in a sagittal direction the posterior part of the head of the femur is outside the articulation. The latter two types are, when marked, to be considered as pathological. In these types there is a high position of the trochanters, which are equally high on the two sides. A high position of the trochanters as a result of abnormal position of the acetabulum is to be considered an abnormal static condition which may result in a deforming arthritis of the hip-joint.

Arthritis deformans coxæ is a peculiar disease of the hip of secondary character dependent upon an abnormal static condition of the lower extremity, including the pelvis, due to an abnormal position of the acetabulum, which in turn brings about a high position of the trochanter. The high position of the trochanter is not a symptom which first develops in the course of an arthritis deformans coxæ, but is already present when the disease sets in. Every unilateral, senile coxitis has the same position of the trochanter on the sound side. There is no arthritis deformans coxæ without a high position of the trochanter. As this disease begins with affection of the capsule and cartilage, and bone changes come later on, the x-ray is of no value for early diagnosis and a negative x-ray is no proof of absence of arthritis deformans coxæ. Pain in the anterior part of the thigh and in the knee is indicative of a hip-joint affection. Frequently there is no history of trauma. The disease can affect one or both sides at any time of life.

The treatment carried out by the author consisted in movement of the hip in various directions after first massaging the entire limb, the gluteal region, and the lumbar region. The massage of the hip-joint consisted of deep friction, which usually

relieved the stiffness. After the massage the limb and gluteal region were submitted to a hot-air bath for a half-hour. Of unusually good effect in limiting the pain and promoting cure were hot sitz-baths and streams of hot water employed two or three times a day. At night hot poultices considerably diminished the pain.

Frequently after a few days the first signs of improvement are noticed. The last to diminish is the pain in the ischial and the crural region and in the hip-joint. Other static abnormalities such as flatfoot must at the same time be treated. The treatment is at best protracted. Extension and resection give unfavorable results.

TRAUMATIC HETEROTOPY OF THE SPINAL CORD.

JENCHEL (*Archiv für klinische Chirurgie*, Bd. lxxxiii, H. 1) says that the general opinion formerly entertained that in traumas of the spinal column accompanied by more or less marked lesions of the nervous contents the cause is to be sought for in a demonstrable injury of the spine has recently undergone a modification, since on the basis of clinical and pathologico-anatomical investigations in man, as well as numerous experiments on animals, we know that, without demonstrable injury of the spinal column, at once or later on diseases of the spinal cord can occur.

The symptoms on the part of the spinal cord after a severe injury, without the production of a partial or total luxation and without the development of a solution of continuity of one or more vertebræ, are very different from those which result from the ordinary lesions. Many times no symptoms occur; frequently only slight functional disturbances are present, for which there is no anatomical basis, and which after a short time, without any bad after-effects, disappear completely. On the other hand, however, hemorrhage and softening may be produced by contusion or tearing the cord substance, which either at once or gradually are manifested by severe disturbances. There may be cited multiple

sclerosis, gliosis, syringomyelia, as well as post-traumatic poliomyelitis; also death has been observed as a result of injury to the upper part of the spinal column without any demonstrable lesion of the vertebræ. These cases are, however, rare.

The author had an opportunity in September, 1906, to observe a man in the surgical clinic in Göttingen who, thirteen days after a sudden violent fall upon the back of the neck, died. The case excited interest in two different ways. In the first place there were present clinically all the symptoms of a transverse lesion in the region of the neck without any demonstrable lesion of the spinal column, and in the second place a careful microscopical examination gave an extremely rare finding, by means of which the clinical symptoms were explained. The author was unable to find any similar case in literature. The patient was a man thirty-six years old, who on August 30, 1906, fell $2\frac{1}{2}$ meters upon the back of the neck, but retained full consciousness. The head was twisted strongly to the side. He could not rise, and was carried home upon a litter, where he was treated by a doctor until September 4, when he was taken to the hospital. On September 5 the following condition was found: No involvement of sight, hearing, smell, or taste; speech and swallowing unaffected. Patient had pain in the lower part of the neck upon twisting the head. No luxation, subluxation, or fracture was demonstrable. The skin of the lower part of the neck and the upper part of the chest was somewhat swollen. There was no paralysis of the muscles of the neck, but complete paralysis was present in the arms and legs. The muscles of the legs were in a state of contraction, so that passive motion was resisted. There was complete anesthesia from the tips of the toes and fingers up as high as the second ribs. The reflexes were obliterated. Respiration was difficult and almost purely diaphragmatic. There was retention of urine and feces; priapism was present. The pupils were contracted. There was heavy sweating, especially about the head, neck, and breast. Temperature

normal; pulse 92 and regular. According to the statement of the physician under whose care the man first came these symptoms appeared at the time of the injury. The treatment consisted in suspension of the head in a Glisson sling. On the second day after admission the temperature rose to 38.4° C.; on the third day it was 36°, then rose to 39.4° C.; and on the day of death, September 11, 1906, it reached 42°. No change in the morbid phenomena took place during this time. The case was thought to be one of transverse lesion of the cord in the region of the fifth cervical vertebra, even though no deviation of the spine could be observed.

The autopsy revealed absolutely no alteration in the vertebræ, the interarticular cartilages being in good position; neither was there any locking, fracture, or crushing of the skeleton, nor any deviation of the ligaments from the normal. There was no hemorrhage inside the dura, nor was any revealed on cross-section of the cord. There was no change in the meninges. Also, microscopically no change could be observed in the cord substance to explain the clinical picture. However, the microscopical examination furnished a sufficient explanation. The principal lesion was in the region of the fifth cervical segment. Here could be observed with the lower power a complete separation of the posterior horns of the cord with displacement into the white substance. The displacement was quite marked on the right side, while on the left the diastasis was quite narrow. The white matter was crowded over in such a way that the posterior median groove was completely closed up. At the level of the fourth segment the right horn showed partial separation, but the left was intact; at the third segment there was no sign of tearing away of the posterior horn. Likewise the lesion grew less and less down to the third dorsal segment, where the cord was intact. No hematomyelia was shown in any of the numerous segments; however, minute capillary hemorrhages were seen in the right anterior horn, although there was none so situated as to cause any

of the disturbances described. No gross softening or necrosis such as usually follows fractures of the spine was anywhere seen, but microscopically a peculiar necrosis was observed in the cleft produced by tearing away of the posterior horns; also the vessels of the nerves showed some degeneration, though they took van Giesen's stain.

The mechanism of the trauma consisted in a dragging upon the nerve roots at the time of the accident on account of the sudden and very marked flexion and twisting of the neck, thus resulting in a tearing away of the posterior horns of the cord.

The author believes that the findings in this case could not possibly be considered as artefacts, such as have been described by van Giesen.

MALIGNANT TUMORS OF THE INTERIOR OF THE NOSE.

HARMER and GLAS (*Deutsche Zeitschrift für Chirurgie*, Bd. lxxxix, Heft 5 and 6) say that malignant tumors of the interior of the nose are relatively rare. Gurlt found only four cases of carcinoma of the interior of the nose out of 9554 cases of this disease in various organs, and only 15 cases of sarcoma out of 884 connective tissue tumors. The various forms of treatment are discussed, and results of the same in various hands set forth.

The authors sum up the treatment of the cases observed in Chiari's clinic by saying that in the last two years twenty-five cases of cancer and six cases of sarcoma of the interior of the nose were observed. Of the carcinomata, 14 were of the flat-cell and 10 of the cylindrical-cell variety. The sarcomata were either round- or spindle-celled. Of the flat-cell carcinomata, seven were operated upon radically; in three of these the upper jaw was resected, and in two the eyeball was also enucleated. One flat-cell cancer invaded the frontal sinus and was removed by chiseling away the anterior sinus wall. Of the seven cases operated upon radically, six came to autopsy within six months, and in the other

case there was inoperable recurrence within seven months. In five of the cases which came to autopsy there was intradural extension of the disease. Seven cases of the flat-cell variety received only endonasal and symptomatic treatment. Three of these cases died soon after being first seen, two were yet living at the time of the report, and the fate of the other two could not be found out.

Of the ten cylindrical-cell cancers, six were subjected to radical operation. Four of these six died, one showed recurrence a few months after operation, and one was free from recurrence sixteen months after operation. Of the four cases treated conservatively two died, and the results in the other two are unknown.

As regards the six cases of sarcoma, the result in two cases operated upon intranasally is unknown; of four cases in which radical operation was performed, three (one of round-cell sarcoma and two of spindle-cell sarcoma) may be considered cured; one case died of recurrence soon after operation.

TREATMENT OF FRACTURE OF THE NECK OF THE FEMUR.

WALKER (*Annals of Surgery*, January, 1908), basing his conclusions upon the statistics of Bellevue Hospital, including 112 cases of fracture of the neck of the femur, notes that 9 of these cases occurred in patients under thirty years of age, 21 between thirty and fifty, 22 between fifty and sixty, 42 between sixty and seventy, and 15 over seventy. In young individuals the cause is usually great violence. Pain increased by motion is present in all cases; loss of function was noted in 94 cases; and in a few instances the heel could be partly drawn upward toward the hip. Outward rotation was noted in 80 cases. Shortening was recorded in 70 cases, varying from one-fourth to two inches. Crepitus occurred in 40 cases. Fifteen cases were treated five to ten days before entering the hospital as bruises, sprains, etc. Ten patients died within the first week after admission, and 18 patients died within six months after

the injury, the mortality being particularly marked in the aged. As to the results of the 112 cases, 18 died; 32 could not be traced; 30 are unable to work because of persistent impairment of function through pain, through restriction of movement of the hip on account of shortening, and adduction with the necessity of depending upon crutches; 22 showed improvement; 12 have abandoned their crutches and are walking comfortably with a cane, with at times some stiffness and pain; 10 recovered almost completely, are free from pain and stiffness, and able to do their normal work; 10 still remain in the hospital.

The author states that he has used the method advocated by Whitman in 16 cases during the past two months. Nine cases were over fifty years of age; 3 were over sixty. One fracture was through the neck and not impacted, 12 were at the base, and 7 were impacted; thirteen x-ray plates were made to corroborate the diagnosis.

Careful examination is made of the patient's condition in order to determine the wisdom of giving an anesthetic for the period of twenty minutes, this time being required for the application of the plaster bandage. Under complete ether relaxation the patient is lifted upon the table and placed upon a box or pillow about 8 inches high and large enough to support the shoulders, head, and trunk. The pelvis rests upon a sacral support and the extended legs are held by assistants, one holding each leg. Another assistant stands at the head to hold the patient by the shoulders and trunk when extension becomes needful. The leg on the fractured side is abducted to about 45 degrees; the hip-joint is held and supported by the hands of the operator. At the same time traction is made to overcome the shortening by drawing down the leg as far as possible toward its original length, as shown by previous measurements. The pelvis is prevented from tilting upward by simultaneously abducting the sound leg to 45 degrees, this serving to indicate approximately the angle at which the fractured leg should be fixed. Outward rotation is corrected at the same time by lifting up

and supporting the upper end of the femur and rotating inward the leg.

The plaster spica is so applied as to include the pelvis and ends below the edge of the ribs; this permits the patients to assume a semireclining posture and to rise in bed without as much discomfort as when the bandage is carried up to the chest line. It is fitted closely about the pelvis, particularly about the trochanter and behind the articulation, so as to give unyielding support to the articulation. Further, the bandage is closely molded about the patella and condyles of the femur and includes the foot, thus preventing completely any outward rotation.

Folded cotton batting or sheet wadding is placed over all bony prominences, and over this a flannel bandage, carefully adjusted, free from wrinkles or creases, avoiding all direct pressure over bony prominences.

Walker notes that it is necessary to have skilful and powerful assistants who shall supply sufficient strength to overcome the contractions of the strongly elastic muscles during the entire period required to apply the bandage. As to the results, the first case, forty-five years old, a fracture of the base and three-quarters inch shortening, sixteen months after his accident was without pain or discomfort, with but one-quarter of an inch shortening and normal flexion and abduction.

The second case, sixty-five years old, with a shortening of $1\frac{1}{4}$ inches, at the end of nine months was in good condition, could walk well without pain, and had less than half an inch shortening.

Another patient, forty-seven years old, with a primal shortening of half an inch, outward rotation, fulness in Scarpa's triangle, and crepitus, at the end of nine months was able to do normal housework with no perceptible shortening.

The fourth patient, seventeen years old, with primal shortening of $1\frac{1}{4}$ inches, at the end of a year exhibited one-fourth inch shortening, and walked with little or no pain or discomfort. Five other patients under treatment for less than four months

are up and walking on crutches. Six additional patients of less than two months' duration are not yet upon crutches. Walker believes that the results will be as good as these already reported.

SPLENECTOMY IN BANTI'S DISEASE.

TORRANCE (*Annals of Surgery*, January, 1908), after briefly outlining the symptoms of Banti's disease—i.e., a form of symmetrical enlargement of the spleen without cause, progressive anemia with occasional periods of remission, and bronzing and pigmentation of the skin, with some jaundice, followed in three to ten years or longer by scanty, highly colored urine loaded with urates and urobilin, and finally ascites with Laennec's cirrhosis—notes that the affection is characterized by cardiac palpitation on exertion with a feeling of unusual muscular fatigue, often associated with headache and slight pallor of the mucous membrane. After some months the patient's attention is attracted by a tumor in the left hypochondriac region, and there may be a sense of weight and tension. Soon after nausea and vomiting and persistent diarrhea occur. Headache and dizziness may be troublesome. Epistaxis is a common early symptom, and there may be cutaneous hemorrhage or bleeding from the gums or other mucous membranes. There is a progressive anemia with pigmentation or bronzing of the skin and some jaundice.

Abdominal pain with distention of the stomach and bowels, dyspnea, dysuria, cramps in the legs, etc., are common symptoms.

Blood changes are marked by a diminution of the red cells and reduced coagulability; moreover the corpuscles are pale. Torrance has collected thirty-six reported cases, of which nine died, a mortality of 25 per cent. The majority were between twenty and forty years old.

The case he reports was a woman, thirty-five years old, operated upon in 1907, suffering from digestive disturbances, pain in the back and the left side, and a tumor, together with marked muscular weakness,

with yellow, bronzed skin. Hemoglobin was 35 per cent, the reds 4,800,000. The spleen was removed; the wound healed kindly, but two weeks later the patient complained of pain in the abdomen, the pulse became rapid, and the temperature ran up to 104° F. The patient was fed upon red bone-marrow, fresh spleens of cows and sheep, and later extract of spleen in three-grain doses after meals. The symptoms all cleared up and she gained from 15 to 20 pounds. The spleen measured 15x8x7 centimeters. It has been observed that the majority of cases operated upon seem to make prompt and rapid recoveries, except when death shortly follows operation. Some of the cases reported years after surgical intervention continued to do well.

CUTANEOUS BLASTOMYCOSIS.

OBEREMBT (*St. Paul Medical Journal*, February, 1908) reports a case of this infection occurring in the person of a 72-year-old farmer, without history of tuberculosis, syphilis, or cancer in the family. Eighteen months previous to his admission to the hospital the patient noticed a small pimple just below the mid-portion of the lower left jaw, which constantly grew larger, recurring twice after excision, and subsequently resisted the x-ray. On examination there were found irregular, massed papilliform elevations projecting about one-eighth of an inch above the general level of the skin. The edge of the lesion was formed by a raised ridge gradually sloping to the sound skin, and the entire surface involved was covered by a number of small abscesses secreting a seropurulent exudate of an offensive odor. Bleeding was readily excited by slight friction, and crusts were formed by the desiccation of purulent secretion.

The probable diagnosis of blastomycosis was verified by microscopic examination.

These cases as a rule show no previous traumatism and affect by preference the face. They may appear on any part of the body. The affection begins as a small red papule, which soon crusts and gradually

becomes larger, appearing as an irregular warty projection, elevated above the level of the healthy skin and with multiple foci of infection. The abscesses lying on the border of the ridge outlining the lesion may be so small as to be seen only by a magnifying glass. Usually several months elapse before the patch attains the size of a quarter.

Whenever a lesion presents deep-seated as well as superficial miliary abscesses, the smaller ones of which require a magnifying glass for their discovery, and containing a peculiar tenacious pus, together with the elevated inflamed border gradually sloping into the healthy skin, one should suspect blastomycosis, and should examine some of the pus from one of the miliary abscesses for the characteristic organism.

The differential diagnosis generally rests between this disease, verrucous tuberculosis, syphilis, and epithelioma. Syphilis may be excluded by obtaining a careful history from the patient. The lesion in syphilis is as a rule circinate and its border contains ulcers. In tertiary syphilis we very often have an enlargement of the lymphatic glands and evidence of the disease in other parts of the body; furthermore, the lesions in syphilis do not persist for months or years as wart-like elevations without ulceration. Lastly, syphilis reacts much earlier than blastomycosis to potassium iodide treatment.

From verrucous tuberculosis the differentiation is much more difficult, and here also we should elicit a careful anamnesis as to a tubercular history of the patient. The scars left in blastomycosis are soft and pliable and unlike the disfiguring scars of lupus. Blastomycosis will improve under potassium iodide treatment, while verrucous tuberculosis will not be benefited.

In differentiating the disease from epithelioma it is well to bear in mind that the latter rarely occurs before the age of forty, while blastomycosis may occur at any time. The later stages of epithelioma cause glandular enlargement, while blastomycosis never travels through the lymphatics. The border of the lesion in epithelioma is hard and indurated, while in blastomycosis it is

red and swollen, due to the active inflammation. Another important symptom in blastomycosis is the heat, redness, swelling, and burning pain, as a rule worse at night, and very often preventing sleep. The positive diagnosis in all cases should be made either by staining some of the pus, or by excising a small portion of the tissue and staining it for the characteristic organism of the disease.

The treatment of blastomycosis is both surgical and medical. In the early cases the former was the only one used; later on, however, it was found that the course of the disease could in many cases be modified by drugs and the Roentgen ray.

In cases in which the disease is limited in extent and well defined, complete removal is by far the best procedure. By this method the course of the disease is shortened and a cure more certain.

For internal treatment there is one drug which stands far above all others in the treatment of this disorder, namely, the iodide of potassium. This drug was first recommended in this country by Bevan; it should be given in doses of from 200 to 500 grains a day. In cases in which such large doses will not be tolerated by the stomach, the drug rarely gives rise to any annoying symptoms when given per rectum. The Roentgen rays have also proven to be an efficient agent in some cases.

The best results are obtained by a combination of these methods of treatment. Excision should first be practiced of all or as much as possible of the diseased area, after which the Roentgen rays are applied into the open wound. The latter have a beneficial effect upon the disease itself, as well as stimulating the repair of the wound and producing a small and pliable scar. Together with this treatment the iodide of potassium should be given in large doses as above recommended.

The wound in the above reported case healed perfectly, leaving practically no scar; and there has been no recurrence of the disease up to the present time, which is three years after the operation.

RESUME OF SOME RECENT FOREIGN LITERATURE ON THE SURGERY OF THE PROSTATE.

MILES (*Edinburgh Medical Journal*, December, 1907) gives the following excellent résumé of this subject:

In the great majority of cases the clinical features are sufficiently characteristic to permit of a correct diagnosis being made, both as to the nature of the prostatic enlargement and its disposition. At the same time it must be admitted that a certain number of cases occur, and the records of these are gradually accumulating, in which all the symptoms of "prostatism" are present without the gland being enlarged. On the contrary, the neck of the bladder is surrounded by a ring of condensed tissue which has undergone a fibroid change, and which interferes with the opening of the orifice during micturition. For this condition, if it be diagnosed before opening the bladder, the Bottini operation is the method of choice. It is being recognized also, as a result of extended experience in the operative treatment of enlarged prostate, that cancer is more common than is generally supposed. Kümmell, for example, met with nine cases of carcinoma in forty-one cases of prostatectomy performed by him at Marburg. Three of the patients died from the operation; the others were alive a year after, and were able to empty the bladder without difficulty. Göbell, reporting the cases from Helferich's clinic at Kiel, refers to three cases in which prostatectomy was performed for malignant disease, and which were all fatal from pyelonephritis. Referring to this matter, de Quervain points out that the possibility of cancer should be suggested when the urinary troubles have developed quickly and are making rapid progress. In this, as in other diagnostic difficulties, the value of the cystoscope is emphasized by de Quervain, Kümmell, Rumpel, and others. The last-named observer considers it dangerous to distend the bladder with air, on account of the risk of air-embolism.

There seems to be a pretty general agreement that the operation of prostatectomy

has justified the claims of its pioneers, and that the results which it yields are on the whole superior to those of other methods of treatment. Difference of opinion still exists as to the proper time to operate, and the particular symptoms which indicate that that time has arrived. Kümmell, Desnos, and others give the catheter a trial first; Rydygier favors early operation. All are agreed that the occurrence of retention, necessitating frequent catheterization with all its attendant dangers, is a clear indication. Some consider that great frequency of micturition, pain, and particularly hematuria, justify the operation even when there is not actual retention. Freudenberg adds as an indication the occurrence of abscesses in the prostate, leading to ulceration, which renders catheterization difficult and painful. The social condition of the patient, his circumstances as regards work, opportunities for proximity of medical assistance in the event of complete retention suddenly supervening, and many other factors, must be considered in deciding this question.

De Quervain, discussing the indications in more detail, says that there is no doubt that so long as the bladder is not infected and the patient is able to empty it, even with some difficulty, the operation may be delayed. If, however, there is incomplete retention with residual urine, the risk of infection taking place warrants the operation as a preventive measure, even if it does not render it imperative. In chronic incomplete retention with distention of the bladder—that is to say, when the patient only gets rid of the overflow—the operation is formally indicated. In acute complete retention the question is more complicated: if the retention supervenes on a chronic incomplete retention, the operation is indicated, but if it occurs suddenly in a patient who has hitherto been able to empty the bladder fairly well, then catheterization is capable of reestablishing the function of the vesicle muscle, and the patient may remain for a long time free of further trouble. In the presence of complications, such as infection, hemorrhage, or second-

ary calculi, the indications to operate are more clear.

It remains to be mentioned, however, that Rovsing, of Copenhagen, whose opinion on matters of urinary surgery must always command attention, differs from the majority of his colleagues regarding the advisability of performing prostatectomy. He adopts a conservative attitude, on account of the risk of the operation in old and weakly patients. He has performed vasectomy in ninety cases without a death, and with sixty per cent of cures, and he considers it an excellent procedure in early cases of diffuse soft hypertrophy. He has performed suprapubic cystostomy for purposes of drainage in fifty cases without a general anesthetic, and none of the cases have been fatal. In sixteen cases he has been driven to do prostatectomy (ten partial and six complete), the indications having been a suspicion of malignancy, dangerous hemorrhage, or the impossibility of using the catheter on account of the shape and size of the intravesical enlargement. Hypertrophy of the prostate, he says, is an innocent malady so long as it does not cause retention, and this it does only in about sixteen per cent of cases. In these it is to be regarded as a disease, and the main indication in treatment is to obviate this retention and its consequences. As this can be done without danger by vasectomy or cystostomy, Rovsing does not consider prostatectomy justified. When there is total retention of urine, he considers that it is sufficient, in the first instance, to perform suprapubic cystostomy without an anesthetic, stitching the bladder wound tight round a Pezzer catheter. The cystitis can be rapidly cured by injections of silver nitrate; the functions of the kidneys quickly improve, as does also the general condition of the patient. When the patient has regained his strength, the question of removing the prostate can be discussed. In Rovsing's experience the patient is usually so well content with his condition that he prefers to go on with the suprapubic fistula and to keep his prostate.

Freudenberg is an advocate of Bottini's

galvanocautery operation in preference to prostatectomy. He has performed this operation in 152 cases, with a cure in eighty-four, considerable relief in forty-five, and failure in twelve. In eleven cases the operation was fatal. The majority of fatal cases occurred in his earlier series of operations, and he shows that with improved methods and increased experience the mortality has been reduced from 12 per cent in this earlier series to 3.8 per cent in his last series of fifty cases. It is pointed out, however, that relapse occurred within a year in twenty-one of the cases, and the author admits that the operation is only adapted to the special urinary surgeon with wide experience of intravesical work. The chief advantages claimed for the procedure are that the patient is willing to submit to it early, before secondary effects of infection have supervened; that it can be performed under local anesthesia; that there is little risk of potency being lost; and that permanent incontinence seldom ensues. The operation is contraindicated in cases of globular or pedunculated middle lobe; when the condition of the bladder cannot be determined beforehand by cystoscopy or otherwise; in the presence of vesical calculi; and when there is pyrexia.

There is a more general agreement as to the contraindications to prostatectomy, and as summarized by Kümmell these are: a bad general condition of the patient, general arteriosclerosis, long-standing catheter life, diffuse bronchitis, loss of contractility of the bladder, and insufficiency of the kidneys when this cannot be overcome. This surgeon is one of the few who still rely upon cryoscopy of the blood as a guide to the sufficiency of the kidneys. Cathelin includes among the contraindications cancerous disease of the prostate, while Kümmell and several others advise the operation in this condition. Rumpel points out that those forms of enlargement which surround the urethra like a ring cannot be enucleated.

The majority of surgeons perform the operation under a general anesthetic. Kümmell of recent years has almost entirely used spinal anesthesia, and he considers this

a marked advance, as it obviates the effects of a general anesthetic on the heart and lungs, which he considers a great danger in old people. Schleisinger and Göbell also advocate the use of spinal anesthesia. Payr has employed Schleich's local anesthesia, using 50 cubic centimeters of a one-per-cent solution of eucaine.

There seems to be little doubt that the suprapubic route is that most favored by the majority of surgeons. The perineal operation, which has been developed and advocated chiefly by French, American, and Austrian surgeons, has still, however, some strong supporters. Cathelin, for example, thinks that in the large majority of cases this is the route of choice, as it obviates the risk of severe bleeding, and drainage can be more efficiently carried out. It is specially indicated, he thinks, in fat subjects, in very old and weakly persons, and in cases in which the urine is infected. Despite Freyer's records, and while he admits that the suprapubic operation can be easily and rapidly carried out, he holds that there is danger of alarming hemorrhage taking place, that the drainage is very unsatisfactory, that the wound requires much greater care than the perineal, and that there is danger of infection of neighboring parts and of persistent fistula.

Rydygier performs the perineal operation in all cases, except when the middle lobe is specially involved; and Legueu has recourse to it in all cases in which the gland is not much enlarged. Kümmell performs the perineal operation only in cases in which the enlargement of the prostate is mainly toward the rectum, and in very stout patients.

Voelcker, while he considers the perineal method the more correct anatomically and the less dangerous, finds the suprapubic the easier operation.

De Quervain, from a study of the literature of the subject, finds the general opinion to be that the perineal operation is difficult to perform, always attended with considerable bleeding, and very liable to be complicated by lesions of the rectum, followed by the formation of rectovesical fistula. On

these points Freudenberg agrees, and he adds that while the perineal operation seems to be attended with a lower mortality, it is less certain in its results. In the opinion of Kümmell there is no difference between the two operations as regards mortality.

In two of his perineal cases Göbell has had to do a plastic operation to close the fistula. He thinks that fistula is more likely to persist after perineal than after the suprapubic operation, on this point differing from Cathelin, who is of the opposite opinion.

In performing the perineal operation, Rydygier does not open the urethra. After exposing the prostate from the perineum by blunt dissection he incises the capsule on one side, shells out the corresponding lobe, and then clips it away from the urethra.

The suprapubic operation numbers among its supporters Israel, who recommends it very strongly, even in fat subjects. Carlier and Helferich also prefer this route. Among the advantages claimed for this operation are its safety and the shorter duration of the fistula (Göbell); the ease and rapidity with which it can be performed, the greater facility of removing the median lobe, and the less likelihood of overlooking calculi in the bladder (Schleisinger); the diminished risk of infection of the wound, and the good drainage afforded by the suprapubic opening (Pousson). Freudenberg thinks it specially useful in those cases in which there is some doubt as to the condition of affairs within the bladder, and when there are calculi present. Rovsing, when forced to perform prostatectomy, prefers the suprapubic route, but he qualifies his approval by the remark that "just as it is beautiful and easy, so also is it dangerous and treacherous."

Riedel draws attention to a danger of the suprapubic operation: no fewer than four of his patients died of pulmonary embolism, due to thrombosis of the prostatic plexus.

When there is marked infection of the bladder, de Quervain favors the two-stage operation, a suprapubic cystostomy being performed and the bladder drained and purified through this wound, and the pros-

tate enucleated some time later when the septic element has been eliminated.

The combined perineosuprapubic operation is very rarely called for, and is only indicated when the prostate is exceptionally large (Cathelin).

A modification of the suprapubic operation, which consists in a temporary local resection of the symphysis pubis, has been described by Wullstein, of Halle.

The operation is specially indicated in diseases of the prostate, in fistulæ between the bladder and rectum, and in tumors of the bladder situated in the fundus or in the vicinity of the ureters.

The skin incision is made from a point a finger-breadth above the middle of Ponpart's ligament on one side to the corresponding point on the other, is convex downward, and passes close to the root of the penis, which is drawn downward. The suspensory ligament is divided close to the root of the penis, and the inguinal canal opened up by dividing the aponeurosis of the external oblique; the transversalis fascia immediately above the spine of the pubis and near the outer border of the rectus is opened so as to admit the finger, which is passed in behind the symphysis and separates the bladder from it. Through the opening in the transversalis fascia a wire saw is passed around the symphysis just outside the root of the penis, the section passing upward through the spine of the pubis on either side. The symphysis is then displaced upward, leaving, however, a small portion at its lower border in continuity with the root of the penis and subpubic ligament, this portion being detached from the rest by means of a chisel.

This method gives very free access, the obturator vessels and the femoral vessels are not damaged, the obturator membrane is left intact, and no tendency to hernia remains; and, the lower part of the symphysis being left, the dorsal vessels and nerves of the penis are so completely preserved that there is no interference with the mechanism of erection.

This stage having been reached, the bladder is emptied of urine and then filled with

air, moderately and very slowly, and this avoids infecting the wound with any bladder contents. In cutting into the bladder the incision is so made as to avoid the blood-vessels, horizontally or obliquely, according to the situation. The finger of an assistant in the rectum projects that portion of the bladder which it is desired to deal with into the wound. To keep bladder dry for the first two or three days, a catheter should be inserted in each ureter, and a small quantity of nitrate of silver solution may be injected once or twice a day. In addition a catheter should be tied in the bladder.

If the bladder wound is stitched by the Lembert method a fistula is very apt to arise. It is self-evident that one invaginating suture on the top of another through the thickened unyielding walls stretches and renders inefficient the inner tier of sutures; and as there is no peritoneal covering in the extraperitoneal portion, there is no layer which will easily unite. Wullstein proceeds, therefore, in this way: he makes a curved incision through the muscular coat and raises this in the form of a flap, and having dissected it up to its base, incises the mucous membrane. When the operation is complete he closes the mucous membrane with two, or it may be even three, tiers of invaginating sutures, and then brings down the muscular flap on the top.

The symphysis is then replaced and fixed with two silver-wire sutures, and its lower edge fixed with periosteal sutures. The suspensory ligament is stitched again, and the opening in the abdominal wall closed up so far as the transversalis fascia and inguinal canals are concerned.

It would appear from the papers here summarized that the chief difficulty encountered by Continental surgeons in the after-treatment of cases of prostatectomy, whether perineal or suprapubic, is the management of the drainage. The relative merits of the large rubber tube inserted through the suprapubic wound, the retained catheter, and the combination of these are frequently discussed; and while some surgeons favor one method and some another,

no one seems to find any of them entirely satisfactory. That these difficulties can be almost completely overcome by employing Cathcart's adaptation of the Sprengel pump, or some other method of suction drainage, such as that suggested by Caird, does not seem to be appreciated, and no reference is made to such measures by any of the writers.

Schleisinger and Israel both recommend that the cavity left after removal of the prostate be packed with gauze before the drain is introduced, but the majority seem to consider this unnecessary. Göbell and some others irrigate the bladder several times a day through the catheters.

The persistence of a fistula has frequently been observed after both the perineal and the suprapubic operation, but it is not clear from the available evidence which operation is more liable to be followed by this troublesome complication. In two perineal cases Göbell closed the fistula by a plastic operation.

Incontinence, due to destruction of the vesical sphincter, has been met with by de Quervain, Desnos, and others. In some cases this was only temporary, the muscular fibers of the membranous urethra taking on the sphincteric action; in others it was permanent.

Stricture of the urethra developed after the perineal operation in three of Kümmell's patients. The stricture was situated in the membranous portion of the urethra, and after it had been dilated by bougies the patient was able to pass water in a full stream. Kümmell recommends that in all patients who have undergone prostatectomy bougies should be passed regularly for six months after the operation, to prevent the formation of stricture. De Quervain at one time made it a practice to pass bougies after the operation, but he now considers this precaution superfluous, and has omitted it in his recent cases. Rovsing has met with stricture after two of his suprapubic and one of his perineal cases. In the last stones formed in the cavity left by the operation.

Loss of the genital functions has been

urged as a strong objection to the operation of prostatectomy by its opponents, and especially by those who advocate the Bottini procedure, and the possibility of its occurrence is admitted even by its strongest supporters. Desnos considers it a somewhat common sequel, especially after the perineal operation, in which the removal of the terminal portion of the vasa deferentia renders erection impossible. Freudenberg also looks upon impotence as a certain sequel to a complete perineal operation. He reports, however, the conservation of sexual power in some cases, and in one even after vasectomy had previously been done. De Quervain states that potency was lost in all the five cases operated on by him, in which it was present before the operation. Legueu is of opinion, and in this he agrees with most observers, that the suprapubic operation is less liable to be followed by loss of sexual power than the perineal.

The deleterious effect of the loss of the prostate on the mental condition of the patient is emphasized by Rovsing, who refers to several cases of suicide following the operation. He thinks that there is a direct connection between the prostatectomy and the mental disturbance, and he supports this view by pointing out that inflammatory destruction of the prostrate gland tissue by gonorrhea, tuberculosis, or suppuration is also liable to be followed by similar mental deterioration. One of Voelcker's patients committed suicide some time after the operation. Kumpel has observed psychical disturbances and melancholia after removal of the prostate, and two of his patients subsequently committed suicide. De Quervain, on the contrary, has seen no such effects; rather have his patients improved in their moral tone and "rejoiced in the rejuvenescence." The fact that the cases quoted by Rovsing and others constitute rare exceptions in the great number of patients submitted to the operation of prostatectomy seems to him to prove that the loss of the hypothetical internal secretion of the gland does not exercise any unfavorable effect either on the physical or the mental condition of the individual.

There is no room for doubt as to the beneficial results of prostatectomy in those who survive the operation and escape the complications which have been referred to above. All are agreed that the patient is relieved of a burden which is well-nigh unbearable, and enters upon a new lease of life with restored health and renewed vigor. The benefits derived from the operation are so great, and are shared in by such a large proportion of those operated upon, that the sufferers from this disease are amply justified in running considerable risks to obtain them. What the risk exactly amounts to is difficult to determine. The statistics of individual operators with regard to the mortality of the operation vary greatly, and combined statistics are apt to be misleading. Thus we find that in 586 operations, performed by seventy-one surgeons, tabulated by Legueu, the mortality was 13 per cent; but if the cases recorded by Freyer are excluded from this list the percentage rises to 17. The last statistics of Freyer show a mortality of only 3 per cent, while his combined records represent 7 per cent (de Quervain). The results brought before the Congress of German Surgeons this year by different operators show a mortality varying from 10 to 30 per cent. While we are free to admit that the material is not reported in a form which enables us to arrive at a reliable estimate of the value of the operation from those figures alone, we cannot avoid the feeling that the results are much less satisfactory than those obtained by British and American surgeons.

PHLEGMONOUS SIGMOIDITIS.

OLMSTED (*American Journal of Obstetrics and Diseases of Women and Children*, February, 1908) reports a case of phlegmonous sigmoiditis in the person of a young woman, twenty-four years old, who suffered occasionally with constipation. The acute attack was inaugurated by a desire to stool, recurring frequently, and accompanied by rectal tenesmus and severe abdominal pain, intermittent in character. This condition

continued for several days. It was accompanied by slight tenderness over the left lower quadrant of the abdomen, and occasionally small quantities of bloody serum were passed by the bowel. Later the muscles on the left side became rigid and the tenderness was markedly accentuated. On abdominal exploration a hard, sausage-shaped mass was felt in the sigmoid. This was drawn out of the abdomen and was found to consist of a localized inflamed segment of the sigmoid. It was hard, contracted, of a dusky-red color, five inches in length, and involved apparently all the structures of the bowel. The colon above the diseased area was moderately distended. There was no peritonitis, nor was the omentum adherent to the inflamed bowel. Resection was practiced, and a Paul tube placed into each divided end of the remaining bowel. The patient recovered. Examination of the resected loop showed that the swelling was so great as to have entirely occluded the lumen of the bowel. There was a sanguinopurulent infiltrate, showing the presence of the streptococcus and colon bacilli. The appearance was much that of a local erysipelas.

In commenting upon this case Olmsted notes that circumscribed inflammation in different parts of the colon can readily result from irritation of fecal masses in persons affected with constipation, and that the two parts so involved are usually the sigmoid and splenic flexures. The pathological condition varies from acute phlegmonous infiltration of the coats of the bowel, with the formation of ulcer of the mucosa and pericolic inflammation, to milder grades where there is simply a hard infiltration of the bowel walls with hypertrophy of the muscular coats. In the severer cases there is pus formation causing a pericolic abscess, which by perforation of the peritoneal cavity may lead to general peritonitis, or by opening into a neighboring organ may lead to fistula. Some of these cases when operated upon present all the appearances of carcinoma. Mayo's and Brunn's cases of sigmoiditis were secondary to diverticulitis. They were all over forty-five years of age.

There may be attacks of obstruction without previous indications of disease of the sigmoid.

TREATMENT OF SARCOMA WITH THE MIXED TOXINS OF ERYSIPELAS AND BACILLUS PRODIGIOSUS.

COLEY (*Boston Medical and Surgical Journal*, Feb. 6, 1908) contributes a further paper on this important subject, basing his treatment upon the accepted clinical facts that inoperable sarcomas and even carcinomas have been known to disappear, the patients to remain well and permanently cured, as the result of either accidentally acquired or intentionally inoculated erysipelas, and states that the use of the toxins has been followed by complete disappearance of inoperable sarcomas and carcinomas not only in his own hands but in those of other surgeons and physicians.

Coley's present cures number 28 (three-year limit), and those treated by others upward of 30. In the great majority of cases diagnosis was confirmed on microscopical examinations and by the leading pathologists of the United States. In the few remaining cases the concurrent opinions left no reason for doubt as to the correctness of diagnosis. In several cases there was also a history of recurrence after primary operation. As to the limitation of the field for the toxins, Coley states that he has sufficiently emphasized the fact that his mixed toxins are efficient only in cases of sarcoma and not in cases of carcinoma. While the mixed toxins have a marked inhibitory effect upon the growth of carcinoma, experience has shown this to be almost temporary and very rarely curative, though there is some evidence that this inhibitory action, even in carcinoma, is sufficient in cases in which the toxins are used as a prophylactic after primary operation to prevent or delay recurrence. The mixed toxins are applicable in inoperable cases, including under this heading only those in which the growth is so extensive as to make radical removal impossible, also those in which such a removal would imply

crippling deformity, and in cases in which the sarcoma has been removed by an operation. In this latter class the toxins are employed as a prophylactic against recurrence. There is no certainty of success in any particular case.

Coley has altogether personally treated about 430 cases of sarcoma with mixed toxins. In 47 the tumor completely disappeared. Twenty-six patients remained well from five to fifteen years, all kinds of cases of sarcoma, excepting the melanotic variety, having yielded to the treatment. There is no appreciable risk in the treatment of sarcoma by mixed toxins. In only three of the 430 cases in which Coley employed his treatment could death possibly be attributed to the toxins. Of these two were in the last stages of the disease, with extensive metastases and very weak heart action. In preparing the mixed toxins according to the latest method, the two organisms are grown separately, and the bacillus prodigiosus, in the form of a dry powder, is added to the sterilized streptococcus broth. The process of preparation is as follows:

Soak 1 pound of minced beef over night in 1000 cubic centimeters of cold water. Then boil for one hour and filter through coarse cotton cloth of any sort. Add of peptone (Witte's) 10 grammes; of NaCl 5 grammes. Test the reaction to litmus and render slightly alkaline by the addition of a sufficient quantity of 10-per-cent NaOH solution. Boil for one hour. Filter through filter-paper. Distribute into small flasks, 2 to 50 cubic centimeters in each flask. Sterilize by boiling for one-half hour on three successive days. Sow each flask with a few cubic centimeters of a broth culture of streptococcus. Allow to grow in the incubator for three weeks.

To prepare the prodigiosus suspension: Spread an ordinary two-per-cent agar medium to a depth of about one centimeter at the bottom of a large "Roux" or "anti-toxin" culture flask. Sterilize as usual by boiling for one-half hour on three successive days. Over the surface of the agar, with the usual precautions against contamination, pour a two-day-old broth cul-

ture of bacillus prodigiosus. Manipulate the flask so that the entire agar surface has been touched by the broth, and drain off the surplus fluid. Allow the prodigiosus to grow at room temperature in daylight, but protected from the direct sunlight, for ten days. Scrape off the thick red growth with glass rods and rub up with a pestle and mortar to a smooth, rather thick suspension, using physiological salt solution as diluent. Bottle and sterilize in the bottle by heat at 75° C. for one hour. This suspension can be diluted further at any time. The amount of diluent needed is ascertained by determining the weight of nitrogen per cubic centimeter of suspension (Kjeldahl's method). This multiplied by 6.25 gives the weight of proteid present, and this should be 12.5 milligrammes per cubic centimeter of the suspension to be used for the mixture.

To prepare the mixture, take of streptococcus broth culture, three weeks' growth, 100 Cc.; of prodigiosus suspension (containing 12.5 mg. of proteid per cubic centimeter, or 375 mg. of proteid in all), 30 Cc.; of glycerin, 20 Cc.

Each cubic centimeter of the mixture then contains 2.5 milligrammes of prodigiosus proteid.

After mixing, bottle in glass-stoppered bottles. Add a small piece of thymol (size of pea to one-ounce bottle) to each bottle and sterilize two hours at 75° C. Keep on ice until used.

It is important that the mixed toxins should be carefully kept in a glass-stoppered bottle in a cool, dark place. It is best to keep the bottle on ice from the time of preparation to the time of use.

The toxins retain some, though not all, of their virulence for a long period of time, and in some cases excellent results have been obtained from preparations which were at least eight months old. The writer's own experience is, however, that the mixed toxins are liable to lose some of their efficiency with time, and he does not use preparations which are more than a few weeks old.

The rules and conditions under which the

toxins are administered are as follows: Begin in every case with a very small dose, not over $\frac{1}{4}$ minim for an adult, diluted with a little boiled water to insure accuracy of dosage. For a child the dose should be proportionately smaller according to the weight of the patient. As a matter of precaution, the first few doses should in all cases be systemic, remote from the tumor.

The dose should be gradually increased $\frac{1}{4}$ minim when given into the tumor, by $\frac{1}{3}$ to $\frac{1}{2}$ minim when injected outside the limits of the tumor, until the desired reaction is obtained. The best results are obtained by doses sufficiently large to produce moderately severe reactions, a temperature of 102° to 104° F. with or without a chill. The more highly vascular the tumor, the more severe is the reaction, and therefore the smaller must be the dose. If a chill occurs, it will usually take place from one-half to three hours after the injection. The smallest dose from which Coley has known a chill to occur in an adult is $\frac{1}{4}$ minim; the highest dose from the latest preparation of the toxins, to which he has himself advanced by gradual increase, has been 12 minims, although he knows of one physician who has used the same preparation, in the case of a sarcoma of the sternum, in doses as high as 30 minims. There are few cases in which such large doses would be safe. After a chill sets in, hot bottles and blankets should be applied. On rare occasions it may be wise to give some stimulant in the form of brandy or strychnine, particularly if there is much cyanosis.

A chart of the temperature and pulse should be carefully kept and observed, as it is the best guide to the proper increase of the dose. The temperature should be taken morning and evening and two hours after the injection.

After a few days it is safe in most cases to inject into the tumor itself, but if the tumor is highly vascular, or the patient is feeble from age, weakness of heart action, or other cause, it is best to continue making the injections outside of the limits of the tumor, until the susceptibility of the patient to the toxins has been ascertained and it is

clearly safe to inject into the tumor. Also in cases in which the tumor is in a region where injections would be difficult or dangerous—*e.g.*, within the abdomen or pelvis—the injections should be all systemic, the most favorable sites being the buttocks and abdominal wall.

When the injections are given outside the limits of the tumor, it is desirable to give them as close to it as is consistent with safety and convenience.

When the injections are made into the tumor, only from $\frac{1}{4}$ to $\frac{1}{2}$ of the dose for injections outside the tumor is required to produce the same reaction. Sometimes the best results are obtained by giving the injections alternately into the tumor itself and remote from it, and in many cases successful results have followed from purely systemic injections remote from the tumor.

If there is much depression following the reaction and the patient's general condition is not very good, it is best to give the injections every other day or three times a week. If the patient can bear the injections daily, the chances of success are greater. In no case should an injection be made until the temperature from a reaction has fallen to normal or practically to normal.

After an interval of more than a week's rest the toxins, when resumed, should be given in smaller doses than the last injection. The dose should also be reduced during menstruation.

A good tonic—preferably strychnine, quinine, and iron—should be given during the treatment, and careful attention should be paid to keeping the bowels free.

In successful cases a marked improvement is usually noticed within one to two weeks, often within two or three days. The first signs of improvement are decrease in size, marked increase in mobility, diminution of vascularity. When the tumor is apparently hard, of bony or cartilaginous consistence, it tends to become softer under the treatment. If no improvement has occurred at the end of four weeks' vigorous treatment, the chances are that none will occur, and little is to be hoped for beyond a retardation of growth. It may be wise, in such event, to

abandon altogether the treatment or lessen the dose to the point of not producing a chill. If, however, there is decided improvement, the injections should be continued until the tumor has wholly or nearly disappeared.

Success depends very largely upon the careful and judicious determination of the suitable dosage for the individual case. There is often a very narrow margin between success and failure; and while on the one hand it is important to guard against too large a dose, which may produce too rapid breaking down of the tumor, on the other hand it is necessary that the doses be sufficiently large and frequent to stop the growth of the tumor and eventually destroy it.

The average duration of treatment in successful cases has been between two and four months. In some cases, however, the treatment has been continued in small doses for more than a year, and the patients have remained well up to date, many years after the cessation of the treatment. In one case, an eight times recurrent spindle-celled sarcoma of the chest wall (soft parts), the toxins were administered, with occasional intervals of rest, for nearly four years. The patient, a well-known physician, has had no treatment for over seven years. The long-continued use of the toxins is not productive of harm.

In making the injections any good hypodermic syringe will answer, but it is best to use one in which one minim can be accurately measured on the piston rod rather than upon the barrel of the syringe. The needle, which should be of moderate fineness and at least one inch in length, should be sterilized by an alcohol flame before and after use, and boiling water should be passed through the syringe before and after use. In doses less than two minims the toxins should be diluted with boiled water; in doses of and above two minims there is no need of dilution. The skin over the area in which the injection is to be made should be carefully cleansed with alcohol.

In order to reduce the local pain caused

by the injections, an equal amount of a two-per-cent sterilized solution of hydrochlorate of cocaine may be added to the toxins. When the surface of the skin is much affected by the injections, applications of carbolic compresses, 1:60, may be used as a relief; in some cases antiphlogistine gives even better results.

While the patient is under the treatment the pain due to the tumor may be relieved by aspirin, codeine, or morphine, administered in the usual ways.

The injections should be made deeply, whether into the tumor or outside the limits of the same, as the local irritation is then much less than if the injections are made merely subcutaneously.

When the toxins are used as a prophylactic against recurrence after operation the patient need not be confined to bed but may pursue the regular routine of life, and only sufficiently large doses should be given to cause a slight rise of temperature from 90° to 100° F., nor need the toxins be given more than three times a week. Coley's practice is to give two or three periods of treatment each of three or four weeks' duration.

In the same number of the *Boston Medical and Surgical Journal* LARRABEE reports the results of treatment of leukemia with mixed toxins of Coley. He observes that this treatment demonstrated in one instance a degree of improvement amounting to symptomatic recovery, which has now lasted upward of four months. Another case showed considerable temporary improvement. The third showed improvement in weight and general condition only. A case of the acute lymphatic type was uninfluenced.

Larrabee states that with the truly marvelous effects sometimes obtained with the x -rays he is unable to say that toxins will compare favorably. Cases have been restored to complete health by the x -rays, and though they always relapse sooner or later, some have remained well for months. One, reported by Grawitz, was still perfectly well after fifteen months. The toxins of streptococcus and bacillus prodigiosus are decidedly more painful, and in the writer's opinion

decidedly more dangerous. It is possible that their effects will prove more permanent, and Larrabee's first case gives hope that they may prove effective in some cases in which the Roentgen rays fail. Their great advantage at present is that they can be used in many cases in which radiotherapy is not available.

PYLORIC STENOSIS.

FINNEY (*American Journal of the Medical Sciences*, March, 1908) states the advantages of pyloroplasty are obvious, preserving, as it does, the natural anatomical and physiological outlet. A year ago he reported a three years' experience with this operation, covering a list of 33 cases. During the past year he has operated upon 12 additional cases, making 45 in all. In this series of cases he has endeavored, as far as possible, to test the method in all classes of benign stenosis of the pylorus and its attending complications. In this list are included examples of practically every condition with which one is likely to meet, namely, dilatation of the stomach, dense adhesions, hypertrophy and cicatricial thickening of the stomach wall, acute and chronic ulceration, hemorrhage, pylorospasm, etc. The results thus far obtained have been most satisfactory. He has found no case in which the operation was contraindicated, or could not be performed. The objection urged against it, namely, difficulty of performance in the presence of adhesions and dense cicatricial tissue about the pylorus, are, in his experience, more fanciful than real. He has performed the operation many times in the presence of adhesions and cicatricial tissue of the densest character. The ease with which it can be performed depends largely upon what Kocher has called "mobilization of the duodenum." This procedure was first suggested and insisted upon in Finney's original paper, and if the duodenum is sufficiently freed to allow of its being brought easily into apposition with the stomach wall, as is possible in practically all cases, the difficulties of operation will be largely done away with.

This operation has the additional advantage that it renders possible the excision, when it is deemed advisable, of an ulcer, active or bleeding, or cicatricial tissue, from the anterior gastric or duodenal wall. He has on several occasions been able to do this. It is perfectly possible to provide a pylorus of ample diameter. One should, however, not make the opening too large, as it might give rise subsequently to disagreeable regurgitation of bile, which has been observed by Mayo. One of the most satisfactory features of the operation is the almost entire absence of postoperative nausea and vomiting. Just why this should be so he does not know, unless it has to do with the division of the pylorus, and the doing away with pylorospasm. In the majority of cases relief has been immediate and marked, but Munro has found that it came a little later in his cases than it did after the operation of gastrojejunostomy. The mortality-rate is about the same, perhaps a little better than that of gastroenterostomy. Friedenwald has studied the digestive changes present in a number of Finney's cases, both before and after operation. His reports show uniform restoration to a practically normal condition of the stomach, both as to size, function, and motility.

The technique of the operation as originally reported by Finney has been modified by Gould, and the majority of operators who use it at all prefer this modification, making use of intestinal clamps. Finney still prefers the original method and the interrupted mattress suture of Halsted, believing the clamps to be unnecessary, and for the anterior wall, at least, the interrupted to be safer than the continuous suture, particularly in the presence of dense cicatricial tissue. Therefore in all cases of benign stricture of the pylorus Finney would give preference to pyloroplasty as against gastroenterostomy, believing that it better than any other method fulfils the conditions to be met.

Stenosis of the pylorus in infancy is a distinct pathological entity and should be

considered by itself. Scudder, in a recent monograph, has collected 155 cases reported in the literature. There is uniformly found a tumefaction occupying the position of the normal pylorus. This consists of a hyperplasia of the circular, muscular fibers of the pyloric segment. Various theories of the etiology have been advanced, all interesting but unsatisfactory.

As to the choice of operation for this very interesting pathological condition Scudder has this to say: "Pyloroplasty and gastroduodenostomy, whether of the Kocher or Finney type, are theoretically and physiologically ideal procedures. Posterior gastroenterostomy is proved to be physiologically satisfactory, and in these cases of infantile stenosis is certainly anatomically the choice of all procedures." Whether the obstructed pylorus recovers itself after the gastroenterostomy and functionates naturally after a time is as yet undetermined, because there are no records of autopsy findings long after operation. Meanwhile, owing to the peculiar pathological conditions present and the difficulty of manipulation on account of the small size of the structures dealt with, gastroenterostomy should probably be given the preference.

INDICATIONS FOR SURGICAL INTERVENTION IN SUPPURATING MIDDLE-EAR DISEASES.

COHN (*New York Medical Journal*, Feb. 29, 1908) states that the first important surgical intervention, the performance of which it is our duty to consider in middle-ear disease of infancy and childhood, is the incision of the drum membrane, or, as it has been originally designated, the operation of paracentesis.

Paracentesis is indicated in every form of perforative inflammation. It should be our aim and it is our duty in this form of inflammation to incise the drum membrane if possible before spontaneous rupture can occur, in order to alleviate all symptoms and establish the most efficient drainage. It follows likewise that in those cases in which

rupture has occurred, it is our duty to aid nature by making an incision if there are any symptoms pointing to retention, pressure, etc.

Paracentesis is not indicated in the non-perforative form of inflammation. The formulation of these two indications would suffice were it not for the fact that in practice we meet with a group of cases in which we unfortunately are perplexed to determine the character of the otitis, and if we question ourselves, therefore, as to the fact whether we have any absolute guide which enables us to distinguish between these forms, we must frankly confess that even the most experienced will find it impossible in every case from its inception to determine absolutely upon the character of the inflammation.

Paracentesis should be performed in every doubtful case in which distinction is impossible or difficult, and whenever immediate depletion and diminution of tension in the tympanic cavity appear advisable. Our aim, however, should be to evolve a symptomatology which will enable us to distinguish between the various forms of inflammation. As a guide to the practitioner a trias of symptoms has been considered as an indication for paracentesis, namely, a bulging drum membrane accompanied by pain, and the presence of an elevated temperature. While for most cases this trias occurring simultaneously may be considered a safe guide for the diagnosis of a perforative otitis, the author has found one modification of great service in enabling him to distinguish. For instance, earache not readily controlled by application of heat and recurring quickly after removal of poultice or water bag, accompanied by a rise of temperature and a bulging, usually speaks for the existence of a perforative form of inflammation. On the other hand, given a child suffering from intense earache, on examination we may find a high temperature, a typically bulging drum membrane, apparently the complete trias; if we apply moist heat or a water bag the child quiets down speedily, and in a few days there will be a complete

restitution to the normal. This is a type of catarrhal inflammation apparently simulating a perforative form.

The indications for opening the mastoid are as follows:

The mastoid should be opened in all cases of diagnosticated osteitis, if under the usual antiphlogistic treatment the inflammation shows no tendency to resolution.

In pronounced cases of otitis media, complicated by antral empyema, in which the discharge is purulent and shows no tendency to evacuate through the middle ear.

In all cases of prolonged otitis with profuse otorrhea which show no tendency to resolve within a reasonable period, the time chosen for operation depending upon the manifest symptoms, whether, for instance, retention is present or the mastoid bone itself is involved.

In every case of acute otitis, in which there are dangerous symptoms of resorption, and in which the drainage cannot be

established by paracentesis or by the natural perforation. In those cases, even without manifest symptoms of mastoid affection, the mastoid should be opened in order to produce more favorable drainage and enable a thorough cleansing of the ear.

In all cases of mucopurulent otitis, in which the otitis is evidently maintained by the mastoid osteitis, the time for operation depending upon the condition of the patient and the presence or absence of symptoms pointing to retention or other complication of a serious nature.

In cases of protracted otitis, in which there are symptoms of serious secondary complications involving danger of extension of the inflammation inward toward the brain, or to the sinus, or downward toward the neck.

In cases of uncomplicated acute otitis, in which stenosis of the external canal prevents drainage and thorough cleansing of the middle ear.

REVIEWS.

MODERN MEDICINE: ITS THEORY AND PRACTICE. In Original Contributions by American and Foreign Authors. Edited by William Osler, M.D. Assisted by Thomas McCrae, M.D. Volume III, Infectious Diseases (continued)—Diseases of the Respiratory Tract. Illustrated. Lea & Febiger, Philadelphia and New York, 1907.

This, the third volume of what is currently known as "Osler's System of Medicine," is divided into two parts, the first of which is devoted to a consideration of infectious diseases, and is, in a sense, a continuation of Volume II. Part II treats of Diseases of the Respiratory Tract. There are twenty-one contributors, most of whom are well known as observers and writers of distinction, familiar to medical readers.

The opening chapter on Malta Fever, by Colonel Bruce, is a short, concise, clearly written, carefully digested paper on the subject. While other modes of infection

are discussed, particular stress and special consideration is given to the milk-borne origin of the disease.

Maximilian Herzog, whose position as Pathologist in the Bureau of Science, Manila, P. I., enables him to speak with authority, writes on Beriberi.

Chapter III, by Ravenel, is devoted to anthrax, rabies, and glanders. His familiarity with comparative pathology has brought to the physician valuable data not often presented first hand, and rarely so clearly stated. The directions for treatment in this chapter are not always clear and concise—for example, in anthrax the advice to use ipecac externally and internally is, by reason of the great variability in dose under different conditions, not sufficiently definite.

Anders's article on Tetanus is to be com-

mended. Commonly this subject is treated by a surgeon who views it almost exclusively from the surgical aspect and gives less attention to the differential diagnosis from those medical conditions with which it is not infrequently confused.

Cole's article on *Gonococcus* infection should be read by every general practitioner and specialist and particularly by those who are prone to believe that the entire realm of this type of disease 'is' encompassed in the field of a sometimes narrow specialty.

Dyer considers leprosy a contagious disease and regards Jonathan Hutchinson's theory that it is fish-borne as unproven.

The most important part of this valuable work, embracing 300 pages of text, is devoted to a systematic consideration of tuberculosis. Practically every phase of the subject is considered by a specialist whose intimate knowledge of a particular aspect of the disease enables him to speak with confidence and authority. The history and etiology are reviewed by Baldwin, who gives in detail the characters of the different tubercle bacilli described, and although the writer believes that the evidence is against the assumption that one type of the tubercle bacillus may be converted into another, he believes it has been settled affirmatively that the bovine bacillus infects man. The article is eminently practical; the clinician will find summarized, in an excellent form, exactly what is meant by the multitudinous names and symbols applied to the different forms of tuberculin used for diagnostic and therapeutic purposes. The pages on Immunity are especially to be commended.

In his usual careful way, and with much detail, MacCallum has given an excellent summary of the pathology and morbid anatomy of tuberculosis.

Lawrason Brown discusses the symptomatology of tuberculosis, beginning with the general symptoms such as fever, weight, metabolism, blood and circulatory phenomena, digestion, respiration, etc., followed by consideration of the physical signs, modes of onset, course and duration. The classification of lesions, namely, primary, secondary, and tertiary, and of the acute pulmonary

tuberculosis, subacute pulmonary tuberculosis, and chronic pulmonary tuberculosis—the last divided into chronic ulcerative and fibroid forms—constitute the general headings under which he considers the subject. Ten pages devoted to the complications of tuberculosis should certainly be helpful to the general practitioner. The writer is evidently a believer in the use of tuberculin for diagnostic purposes, and gives with clearness and adequate detail the indications and contraindications that should guide the clinician in its use. Prognosis—that always puzzling question in the individual case—receives ten pages of careful exposition. The writer believes that the pulse, temperature, and weight constitute the prognostic triad of greatest value. Of these the pulse is the most useful.

The same writer (Chapter XI) considers the prophylaxis of tuberculosis, opening the subject by a discussion of State and municipal regulation and considering fully individual prophylaxis, sanatoria, and other institutional means of value. The details of the article on treatment cannot be summarized by the reviewer; it is sufficient to say, however, that all the essential phases of the subject are judicially considered. The tuberculin treatment is given in detail and its position as a therapeutic measure conservatively estimated. While admitting its value, the author does not believe that the existing optimistic tendency toward the tuberculin treatment is justified by the facts at present available.

The chapter on Syphilis is by Osler and Churchman. The *spirochæta pallida* is accepted as the etiologic agent. The pages on prophylaxis should be read with interest by all, and most carefully by those who are wont to rush into suppression by edict as a cure-all for social evils.

Chapter XIII, by Thomas R. Boggs, dealing with infections of doubtful nature, treats of Febricula, Glandular Fever, Infectious Jaundice, Miliary Fever, Rocky Mountain Spotted Fever, Psittacosis, Foot-and-mouth Disease, and Milk Sickness.

Part II of the volume is devoted to Diseases of the Respiratory Tract. Thomas

R. Brown writes on the mechanics of respiration and of respiratory diseases, Packard on Diseases of the Pharynx, Nasopharynx, and Tonsils, Dunbar on Hay-fever, Birkett on Diseases of the Larynx, McPhedran on Diseases of the Bronchi including Asthma, Hare on Diseases of the Lung, Lord on Diseases of the Pleura, James on Pneumothorax, and Christian on Diseases of the Mediastinum. The names of these authors may be taken as sufficient guarantee of the quality of the matter presented.

Necessarily the articles are not of equal prominence, nor are the presentations uniform. The volume, however, maintains the high standard accorded those that have preceded it and may be most cordially indorsed as an up-to-date treatise upon the subject with which it deals.

As an example of the bookmaker's art the work may be commended.

W. M. L. C.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by H. A. Hare, M.D., Assisted by H. R. M. Landis, M.D. Volume II, June, 1908. Lea & Febiger, 1908.

The present volume of Progressive Medicine, like the preceding volumes which have been issued under the date of the month of June, contains articles upon Hernia by Dr. William B. Coley, who is such a well-known authority upon this subject, and about 80 pages on surgery of the abdomen, exclusive of hernia, by Dr. Edward Milton Foote, of New York. This is followed by an article by Dr. John G. Clark upon Gynecology. All of the recent literature which has appeared during the last twelve months upon these two important subjects is well covered by these collaborators. Writing upon collateral lines, each one of them has very properly seen fit to criticize, both favorably and unfavorably, the views of others, and to give the reader information as to the methods and views which he himself holds. Dr. Clark's article is followed by an exhaustive one upon diseases of the blood, diathetic and metabolic diseases, diseases of the spleen,

thyroid gland, and lymphatic system, by Dr. Alfred Stengel, which is about 90 pages in length. In this article Dr. Stengel also reviews the literature and controls the statements of others by his own views. The last article, on Ophthalmology, is by Dr. Edward Jackson, of Denver, and gives the practitioner the best views as to the methods of diagnosis and treatment in diseases of the eye as met with by the specialist and by those who have, by force of circumstances, to treat the ordinary diseases of the eye.

PRINCIPLES AND PRACTICE OF HYDROTHERAPY. A Guide to the Application of Water in Disease. By Simon Baruch, M.D. Third Edition, Revised and Enlarged. Illustrated. William Wood & Company, New York, 1908.

The profession of medicine in America, and indeed in the world over, is under so much obligation to Dr. Baruch for his urgent advocacy of hydrotherapy that it is a pleasure to find that a third edition of his excellent book has been called for, and it must be a great satisfaction to him to feel that he has been such an active agent in advocating a therapeutic resource which ameliorates suffering and saves life. While it does not seem to us that as many changes have been made in the third as were made in the second volume, the book serves to present a most excellent summary of this important matter. There can be no doubt whatever that physicians in general do not resort to hydrotherapy with the frequency which it deserves, and that even in typhoid fever, in which it has been shown to be so great a blessing, it is often not resorted to. The book is marred to a certain extent by the prolonged quotations from other writers. Dr. Baruch is so essentially a leader in this subject that a book written more from the personal standpoint is desirable, and the views of others could have been given in a more concise manner, thereby saving a considerable amount of space.

Remedial measures other than drugs are constantly increasing in popularity with the profession and the laity, and it behooves every practitioner to be ~~thorough~~ with the contents.

DISEASES OF THE NERVOUS SYSTEM. By H. Campbell Thomson, M.D., F.R.C.P. With colored and black-and-white plates. W. T. Keener & Co., Chicago, 1908.

Dr. Thomson has endeavored to bring together the main facts of neurology, in a concise yet readable manner, in a small octavo of nearly 500 pages. It not only contains a considerable number of colored and black-and-white plates, but also 101 ordinary illustrations, many of which have been provided by Professor Marie, of Paris, and many others taken from patients of his own in hospital and private practice. After an introduction which deals with the general structure of the nervous system and with the functions of its various parts, he takes up the diseases of the peripheral nerves in Section II, the myopathies in Section III, diseases of the spinal cord in Section IV, organic diseases of the brain in Section V, and diseases of function in Section VI.

Dr. Thomson has succeeded in producing an interesting manual which ought to prove popular with those who desire a book which will contain a very large amount of information in a concise form. It is written from the standpoint of a practical neurologist, and deals with practical things to the exclusion of theoretical propositions. It is, therefore, peculiarly useful to the general practitioner.

ELECTRICAL TREATMENT. By Wilfred Harris, M.D., F.R.C.P. Illustrated. W. T. Keener & Co., Chicago, 1908.

Dr. Harris has attempted in this small manual to give a comprehensive view of the various forms of electrical treatment as practiced to-day, being particular to call attention to the work which may be done in medical practice with a good faradic and galvanic battery, as, for example, the results which can be obtained in the treatment of acute sciatica, brachial neuritis, and other forms of neuritis by the proper application of the galvanic current. Explanations have also been given, as far as possible, of the theory of the various forms of current, so that terms like "high frequency," "alternating current," etc., can be readily understood. The book is exactly what its author has

attempted to make it—a useful little handbook for any practitioner, particularly for the one who does not wish to become a specialist in electrotherapeutics, but nevertheless wishes to employ this remedial agent in general practice.

PHARMACOLOGY. The Action and Uses of Drugs. By Maurice V. Tyrode, M.D. P. Blakiston's Son & Co., Philadelphia, 1908. Price \$1.50.

This is a small work designed by its author as a concise text-book which will give the facts essential to the ordinary medical student in the study of the physiological action of drugs. It deals solely with the effect of drugs upon the various tissues of the body from the standpoint of the pharmacologist and not from the standpoint of the practicing physician, but it includes the pharmaceutical preparations and their doses. Surely the statement is wrong that the local irritant action of chloroform is about the same as that of ether, since the former drug is certainly the more irritating of the two. We are glad to see that the author places himself in line with those who teach that alcohol is burnt up in the body, and produces heat and energy, and therefore can replace a certain amount of carbohydrates and fat in the diet, and we are also glad to see that he emphasizes the fact that alcohol is never a stimulant to the central nervous system or a direct stimulant to the circulation. Again, we are glad to see that the author recognizes the fact that continuously administered doses of strychnine or nux vomica do not decrease the susceptibility of the individual to the effects of the drug but rather increase it, although he believes if very small doses are given a considerably increased degree of tolerance may be reached in some persons. A large number of the statements as to the effects of drugs are at variance with the views of most clinicians, although they may be in accord with the opinions of experimental pharmacologists. Altogether we consider that Dr. Tyrode has presented a very useful little manual for undergraduate students, and we trust that it will be largely used.

STATE BOARD EXAMINATIONS AND ANSWERS.
By R. Max Goepf, M.D. W. B. Saunders
Company, Philadelphia, 1908. Price \$4.00.

Although there have been several attempts made in the past to prepare volumes which would contain questions and answers for State Boards of Medical Examiners, this is by long odds the most exhaustive attempt that has yet appeared. It is a large octavo volume of nearly 700 pages, containing questions which have been selected from State board examinations during the past four years, preference being given to those questions asked in the larger and more representative States. In some instances the questions that were asked seemed to the author unsuitable, and these he has excluded. In others, when the question was badly worded he has corrected it. In each instance he seems to have been able to reply to the question in a manner which is concise and adequate. The volume deals with all the branches which are commonly examined upon by the various State Boards, and possesses all the disadvantages of books used by students in the process of cramming for examination, but the care with which it has been compiled, by one who is fully competent to do so, removes many of the objectionable features which are often found in books which appear in the form of questions and answers. It will no doubt prove popular with those who are about to present themselves for license to practice, and he who knows its contents will certainly deserve to pass so far as his medical knowledge is concerned.

GREENE'S ENCYCLOPEDIA AND DICTIONARY OF MEDICINE AND SURGERY. Volume VII. N to P.
William Greene & Sons, Edinburgh and London, 1908.

This is the seventh volume of the Encyclopedia and Dictionary of Medicine and Surgery, the earlier volumes of which we have already noticed in these pages. It contains 1322 subheadings, and deals with such important subjects as the Anatomy, Physiology, and Diseases of the Nerves, Paralysis, and Diseases of the Peritoneum. It also considers such recent subjects as the Ophtho-mo-reaction and Oposonins, the Diseases of the Pancreas and the various Para-

sites, particularly Trypanosomiasis, and the Microorganism of Syphilis and Smallpox. Many of the articles are more than a thousand words in length, and the volume contains nearly 2300 cross-references to subjects treated of in this and other volumes. Volume VII certainly maintains the high standard of its predecessors.

WHY WORRY. By George Lincoln Walton, M.D.
The J. B. Lippincott Company, Philadelphia, 1908.

In a small octavo volume of about 300 pages of large type Dr. Walton, who is well known to members of the American Neurological Association as a wag and wit, has discussed, in a manner which is suitable for lay reading, this important question. He defines worry as a state of undue solicitude, and hypochondria as a morbid mental condition characterized by undue solicitude regarding the health with undue attention thereto pertaining. In these days of Christian science and other forms of so-called religion, which deal more with an abnormal state of mind than with anything else, a book of this kind is timely, and contains so much wit and wisdom that it has a most useful function to fulfil.

RIGHT-HANDEDNESS AND LEFT-HANDEDNESS. By George M. Gould, M.D. The J. B. Lippincott Company, Philadelphia, 1908.

The present volume contributed by Dr. Gould to medical literature deals with theories which have been advanced as to the origin of right-handedness and left-handedness, theories which are by no means few in number. After an introduction, he deals with the origin of right-handedness and with the question, "Why is a particular child right-handed or left-handed?" To those who are interested in this subject, which is perhaps of little importance in one sense, the book can be commended. It is hardly necessary to state that the opportunity is seized to promulgate once more the author's excessive views concerning the question of eye-strain, and the pages are not infrequently marred by that use of hyperbole which at first wins and afterward loses confidence for the author's views.

CORRESPONDENCE.

LONDON LETTER.

BY G. F. STILL, M.D., F.R.C.P.

The topic of the hour is not strictly medical—it is the Franco-British exhibition; but even this has its medical aspect, for there is in it a medical section, and no doubt amongst the enormous number of people from all parts of the world who are visiting the exhibition there will be many of our own profession. It has, however, been shown that in another sense this great undertaking has had medical bearings, for during the building of the extensive structure in which the exhibition is housed no less than 121 casualties have occurred, including one fatal and many serious.

During the present month Presentation Day occurred at the University of London, when as usual the Hall of the University was gay with the academic costumes of the students, male and female, on whom degrees were to be conferred. A regrettable vacancy was caused by the sudden indisposition of Sir Arthur Rücker, the Principal of the University, whose resignation of this high office is already in the hands of the Senate. It is now eight years since the University of London was reconstituted, and in this time the number of students passing the various examinations in all faculties during the year has increased from 3322 to 5316; moreover, the University has acquired the control of University College and Goldsmith's College, and has in addition the administration of about seventeen thousand pounds per annum for education and research. The income of the University is about six times as large now as it was eight years ago. In truth the University of London does but little credit to the great metropolis even now, but it is less of a disgrace than it was a few years ago.

At the Clinical Section of the Royal Society of Medicine this month one of those rare and curious cases was shown of hair-ball in the stomach. The patient, a girl aged nine years, of bright, intelligent ap-

pearance, had been in the habit of pulling out hairs from her head and eating them since she was three years old. For about a year she had suffered with troublesome vomiting and pains in the epigastrium. She was brought to hospital for these symptoms and for a large, hard tumor in the abdomen extending from the splenic region into the right loin. Various diagnoses were made by different medical men; the tumor was generally thought to be a malignant growth. Fortunately, exploratory laparotomy was done, when a large, hard mass of hair weighing over a pound was removed from the stomach. The child made a complete recovery, and by shaving her head closely the habit of hair-eating was apparently broken. This is by no means unique either as regards the age of the patient or the weight of the hairball: there is in the Museum of the College of Surgeons here in London a similar mass from a child aged 2½ years, and there is on record a hairball found after death in the stomach weighing over four pounds.

At the West London Medicochirurgical Society an interesting address was given by Dr. Seymour Taylor on some "neglected remedies." He thought there is a tendency nowadays to run after new drugs and to forget the old methods which experience has approved. The seton, he said, is of great value in some forms of congestive headache and in epilepsy; venesection is of the utmost value when the right heart is in difficulties—it might even save life where death seems imminent in cases of heart disease or chronic bronchitis. In olden times bleeding was brought into disrepute no doubt by using it as a routine treatment, but if used with discrimination it is a most valuable therapeutic measure. Blistering also is avoided nowadays where it might give great relief—for instance, near the rheumatic joint or over the rheumatic heart. Amongst drugs he mentioned sarsaparilla as one which has undeservedly fallen into disuse amongst the profession, although the laity still appreciate its virtues; it is of value not

only for syphilis, but also for some skin diseases which are not syphilitic. Galbanum and asafetida also are not used as often as they should be for the gaseous distention of the bowel which is sometimes troublesome in the late stage of heart disease. He mentioned musk also as of great value as a stimulant; it is one, however, which is too costly for common use.

The Wightman Lecture before the Society for the Study of Disease in Children was delivered last week by Mr. Watson Cheyne. He took as his subject the defensive arrangements of the body as illustrated by the incidence of disease in children.

Dr. George R. Murray, whose researches upon the thyroid gland and its diseases are so well known, has just been appointed Professor of Systematic Medicine at Manchester University, a post which carries with it a physicianship at the Royal Infirmary of Manchester. Professor Murray was until recently Professor of Comparative Pathology in the Durham University. There is to be a Chair of Clinical Medicine distinct from Systematic Medicine at Manchester, and this will be held by Dr. Graham Steell, who is an authority especially upon affections of the heart.

The government has entered upon a new departure in the establishment of a bureau of information with regard to Sleeping Sickness. The function of this bureau is to collect and distribute information as to sleeping sickness, and to prepare a map of the whole of tropical Africa, showing the parts in which this disease prevails and in which the insects live which are supposed to convey it. With such means at their disposal the Committee of the Bureau will advise the officials administering the various parts of Africa as to the precautions which are to be taken in particular districts. Sir Patrick Manson, Colonel Bruce, and Dr. Rose Bradford are on the committee, which includes other persons familiar with the practical problems of tropical sanitation.

A curious situation has arisen at one of the lesser hospitals of London, the Kensington General Hospital. This institution has allowed its expenses to outrun its income to such an extent that its creditors became un-

easy, and a sheriff's demand note for £146 resulted in a bailiff taking possession of the hospital, and a prospect of speedy sale of the hospital furniture to pay the debt. Of course the charitable Londoner was quickly to the rescue, headed by Mr. J. Lyons, whose name is familiar in London in connection with certain popular restaurants. The bailiff was soon persuaded to depart, but it is too early to say that the hospital "lived happily ever after"—indeed, it is by no means certain that the existence of a large number of these smaller hospitals is desirable. London is well supplied with large institutions which are capable of dealing with the medical needs of this great city, and there can be no doubt that if the money given to support numerous small hospitals were concentrated for the upkeep of a few large institutions the work could be done far more economically.

At the London Hospital a statue of Queen Alexandra in her coronation robes has recently been erected; it is the work of Mr. George Wade, R.A., and is to be formally unveiled by the Earl of Crewe in July. Her Majesty has shown a keen interest in the work of hospitals, and is soon to open the large new buildings of the Hospital for Sick Children, Great Ormond Street, which have been erected through the munificent generosity of Mr. Astor as a memorial of his own little daughter, who died recently.

The death of Dr. C. T. Cullingworth has removed one of the best known authorities on obstetrics in this country. He was formerly professor of obstetrics and gynecology at Owens College, Manchester, but in 1888 he was invited by the authorities of St. Thomas's Hospital to come to London as obstetric physician to that institution. It is very rarely that any medical man obtains a staff post at any of the great London hospitals by invitation; the sequel showed, however, that the honor was not misplaced. Dr. Cullingworth quickly became one of the recognized leaders of that specialty in London. He was at one time president of the Obstetrical Society of London, and an examiner both in the University of London and in the University of Cambridge. He passed away at the age of sixty-seven years.

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ORIGINAL COMMUNICATIONS.

THE TREATMENT OF LEUKEMIA BY MEANS OF THE ROENTGEN RAYS.¹

BY HENRY K. PANCOAST, M.D., PHILADELPHIA.

This paper is presented partly as a résumé of a preliminary report made by Dr. Stengel and myself, and embodied in an article which appeared in a recent number of the *Journal of the American Medical Association* (April 25, 1908). Because of the recency of the publication of that report, the presentation of any supplementary data at the present time is impossible, but a résumé of some of the facts therein discussed will be used as a basis for the consideration of the subject of the x -ray treatment of leukemia in a manner appropriate to the present occasion. The object of the report just mentioned was the suggestion of a new and more rational method of employing the x -ray in the treatment of this disease. The term "new" seems justifiable because it has reference to a radical departure from the methods hitherto advised and in use. It seems more rational and is certainly more scientific, because it is based upon the more modern conceptions of the pathology of leukemia. Moreover, the suggestion did not take its origin from mere theoretical reasoning, but the ideas it embodied had previously been put to practical tests, and the deductions and facts presented have the support of clinical observations and experience and efficient and more promising clinical results.

The essential feature of the method, which was suggested by Dr. Stengel in December, 1906, and which since then has been constantly employed, is the direction of the x -ray applications to the bone-

marrow of practically the entire skeleton as the primary object in the treatment, and the relegation of splenic and glandular exposures to a position of minor or secondary importance.

The salient points of difference between this and the older method can be better understood, comparisons more advantageously drawn, and the grounds for suggesting the bone treatment as a preferable method more readily explained by first referring briefly to some of the important features in connection with the older way of treating the disease and the results so far accomplished. In a general way, the primary and essential object in the administration of the treatment has been the exposure of the enlarged spleen and lymph nodes directly throughout the entire course. The desirable results primarily and directly realized have been: First, a partial or complete reduction in the size of these structures through a direct or indirect destruction of the excessive accumulations of abnormal cells causing the enlargements; secondly, a more or less complete reduction in the leucocytosis through the destructive action upon certain varieties of the leucocytes by leucolytic substances resulting from the destruction of cells in the lymphatic structures; and thirdly, a coincident improvement in the patient's general condition. A favorable termination in which these three results were satisfactorily accomplished constituted a symptomatic cure, which in the earlier history of the treatment was generally believed to be perma-

¹Read before the ninth annual meeting of the American Therapeutic Society, Philadelphia, May 9, 1908.

nent, and which was, therefore, the ultimate object to be attained. In the majority of instances the bones in certain localities were exposed, notably in the regions of the knees and sternum, but in a more or less perfunctory manner, as this procedure was generally regarded as a matter of secondary importance.

The gratifying and promising primary results which were realized in a fairly large proportion of cases were soon found to be merely temporary periods of quiescence, and were invariably followed by relapses. Invariably the ultimate outcome has been fatal, and the only real benefit derived from the treatment has been a prolongation of life in most instances for a variable period of comparative comfort. In 1906-07, an analysis of 123 cases personally collected from a review of the literature² and other sources showed that out of 69 of these for which complete up-to-date reports were obtainable, only six, or 8.7 per cent, remained alive and well for a period varying from three to six years, although symptomatic cures had been realized or decided improvement noted in 46, or 66.66 per cent, of these cases.

Warthin, in a recent report,³ mentions having collected from various sources over 200 cases in which *x*-ray treatment had been employed. This presumably represents a later review than the one just referred to. Although acknowledging his inability to obtain definite up-to-date information concerning some of the cases previously reported as cured and remaining well for any length of time, he feels justified from his experience, observations, and knowledge acquired from reliable sources, in drawing the following conclusion: "*No positive proof of an absolute cure of leukemia by Roentgen irradiation exists at the present time.*" There are no good grounds upon which to base an absolute denial of the truth of this statement, even were we inclined to question its reality. All of the six cases just mentioned may still be living

and well, although a year has elapsed since any information was received concerning any of them. In justice to the accuracy of statistics it should be mentioned that the absolute authenticity of the reports in connection with one or more of these cases is more or less questionable. But even were they all still alive and well, we would yet in a measure lack *absolute* proof of a permanent cure having resulted directly from *x*-ray treatment.

In view of these facts *x*-ray treatment in leukemia has not been satisfactory, if we consider only the ultimate results. Some reasons for the apparent lack of conformity of ultimate results with fairly satisfactory primary effects must certainly appear obvious if we carefully consider collectively as well as separately the following three *imprimary* effects must certainly appear ease and its treatment: the effect of direct *x*-ray exposure upon leukemic tissue, the manner in which the treatment has hitherto been carried out, and the modern conception of the pathology of the disease. The applications have invariably been directed against manifestations or results of the disease. The treatment of the first few cases was purely experimental. The directly destructive effects of the rays upon certain new growths suggested their use as a possible means of reducing the size of the enlarged spleen and lymph nodes of leukemia. It is quite apparent that we have progressed little beyond this experimental stage when we continue to make these same structures the most important and almost the only point of attack. Under such circumstances a permanent cure can be considered little more than a coincidence.

The effect of this method of *x*-ray treatment does not differ essentially from that of certain other agents which are known to exert a favorable influence occasionally. Arsenic in a small percentage of cases decreases the leucocytosis and reduces the size of the enlarged lymphatic structures by a destructive action upon the cells in the circulation and those accumulated in the spleen and lymph nodes, and seems to exert a more or less inhibitory influence upon their pro-

²University of Pennsylvania Medical Bulletin, January, 1907. The above figures are derived from the published analysis, amended by more recent information.

³International Clinics, vol. iv, 17th series, 1907.

duction for a variable period of time. The same phenomena have occasionally been observed to follow intercurrent infections, but the effect is likewise temporary only. The effect of x -ray treatment is unquestionably more uniform, more certain, and more favorable in the primary results induced, and, moreover, the expectation of life is, on the whole, comparatively greater, although the ultimate outcome has been very much the same. Comparative results certainly award the x -ray treatment superiority over any other, provided too much is not expected. The advisability of administering arsenic or any other agents exerting a like action in conjunction with x -ray applications is a question that receives too little attention as a rule. Large doses of arsenic are required in order to derive any result, and in many instances this is directly or indirectly deleterious to the patient's general health, even though it may exert some favorable influence over the disease. Such treatment is now but a relic of the days when the administration of large doses of arsenic offered the only possible chance of benefit, but this is not the case at the present time. When we realize that the x -ray applications accomplish practically the same results as large doses of arsenic, and can be employed to far better advantage, is the use of this drug in conjunction with x -ray treatment really necessary? It not only may be prejudicial to the general health, but also, as the x -ray exposures usually tax the metabolic processes and the eliminative functions to a sufficiently dangerous limit, arsenic, which exerts a like action in the necessarily large doses required, simply adds more fuel.

Aside from the well-known common dangers attending the continued application of Roentgen rays, such as dermatitis, sterility, etc., there are certain special ones associated with the use of the x -rays in the treatment of leukemia which are too important to be disregarded: (1) Unquestionably in a certain number of instances death has resulted directly from a sudden overwhelming toxemia arising from a too rapid tissue destruction following an x -ray application

to an enlarged spleen. Such an accident is to a large extent avoidable by the observance of proper care, and a realization of the peculiar effects of x -ray exposures upon lymphatic tissues, especially in connection with this disease. In no other pathological condition in which x -ray treatment is indicated is so much care required in its administration. (2) Although there is no conclusive evidence to prove that radiation has any direct injurious effect upon the kidneys, there is every reason to believe that the strain imposed upon these organs in the elimination of waste tissue products may be, and occasionally has been, pushed beyond the danger limit. (3) In acute cases, acute relapses, and cases with marked toxemia and in which the general condition is very "bad," x -ray treatment has never been beneficial, and, on the other hand, it has frequently hastened the ultimate fatal termination.

Accepting the present views in regard to the pathology of leukemia as correct, the primary focus of the disease exists in the bone-marrow in all types. This is the nearest approach we can make with absolute certainty to an accurate knowledge concerning the primary etiological factor of the disease, either in the investigation of its pathology or in the application of its treatment. We may regard the bone-marrow as the primary source of proliferation of a certain proportion of the characteristic cellular elements found circulating in the blood stream. There is sufficient authoritative basis for the belief that the secondary manifestations, particularly the splenic and lymphatic enlargements, are the results mainly of local proliferation of metastatic deposits derived from the bone-marrow and carried by the circulation. The comparatively rapid changes in the size of the spleen and other lymphatic enlargements so frequently observed are easily explained in this way. One of the interesting observations made in connection with the application of our method of treatment has been the conspicuous quantitative and qualitative changes in the leucocytosis coincident with decidedly perceptible alterations in the size

of the spleen. This has been made possible through the comparative infrequency of the exposures of this organ.

In view of these facts it would certainly seem more rational to direct our treatment primarily to the bone-marrow, as has been suggested. There are four tangible arguments to be offered in support of the claim for the superiority of this method over the older one:

1. The practical limitation of the applications to the metastatic foci or secondary manifestations is irrational because such treatment, while it directly destroys the cellular elements of the structures exposed, and indirectly causes a destruction of similar cells in the circulation, does not exert more than a comparatively slight and temporary inhibitory influence upon the proliferation of new elements, and the primary focus is allowed to continue as a constant source of supply of new metastatic deposits, or at least this process is reestablished soon after the treatment is discontinued. Direct exposure of the bone-marrow, on the other hand, exerts a far more powerful inhibitory influence against this primary new cell proliferation from the start, and may possibly be capable of eliminating it entirely, although this is of course purely problematical. At any rate, this method implies a much more direct attack against the cause of the disease.

2. If bone-marrow exposures were not capable of inducing a satisfactory reduction in the size of the spleen and other lymphatic enlargements, the claims made for this method would not be well founded. But our clinical experience has proved that these secondary manifestations respond even more satisfactorily to this method than to the older one. The technique includes an appropriate amount of direct exposure of these structures, however. The same may be said in regard to the effect upon the condition of the blood. A slow but steady reduction in the leucocytosis has been observed from the start, and continues throughout the course of the treatment in all favorable cases. Sudden and decided drops we believe to be harmful, and should

therefore be avoided. They are not likely to occur when this method is employed. The comparatively slow reduction peculiar to the bone treatment is in a measure additionally advantageous in tending to prevent a too early cessation of the applications. An approximately normal leucocyte count was attained at a comparatively much earlier period under the older method, and has always been an important factor in influencing toward a termination of the treatment. A significant and rather peculiar phenomenon observed in connection with this method of application in many lymphatic cases of mild type is the tendency of the leucocyte count to approach a normal figure at a very early period, and to remain stationary at such a point throughout the remainder of the treatment. This tendency should be borne in mind, and its occurrence should not be taken as an indication to stop. Favorable cases have invariably shown a gradual and progressive improvement in the qualities of the blood in all other respects as well.

3. The dangers particularly associated with the x-ray treatment of leukemia are in a large measure avoided in the employment of this method. Toxemia should always be regarded as an indication of a harmful effect, when due to the applications. In most instances it results from direct exposure of the spleen or lymph nodes. In this method these structures are not exposed until a much later and safer period, after they have been considerably reduced in size, and the leucocytosis has diminished proportionately, and the patient's general condition has improved markedly. At such a time their direct exposure is not dangerous if reasonable precautions are observed. The wide distribution of the bone applications over almost the entire surface of the body reduces the risk of dermatitis to a minimum.

4. Several other important but less significant advantages have been noted among our clinical observations. In favorable cases the early evidence of improvement in the general condition, its progressive betterment, and the early return to an apparently normal state of health are striking features.

The bone pains frequently encountered in the splenomedullary type especially are usually relieved after a few applications.

The technique we have employed in the application of this method cannot be mentioned here, but it is described in detail in our preliminary report. So far we have seen no reason for making any radical changes.

The Prognosis.—It is too soon to prophesy as to the ultimate prognosis under this method of treatment. But as the matter now stands we are in a much better position to settle the question within a reasonable time as to whether a permanent cure can ever be attained directly from x -ray treatment, because we are bringing our forces to bear more directly upon the cause of the disease. Our primary object is of course a permanent cure, but the likelihood of its attainment cannot as yet be determined. If such a result is not found possible, the bone treatment becomes purely a prophylactic measure, in which case it is unquestionably the only form of radical

treatment to be considered. The expectation of life is undoubtedly longer under this method. If it shall be proved that this is the most favorable prognosis to be realized, we will be confronted by the question as to whether x -ray treatment will continue to act as a prophylactic measure in this way indefinitely, or whether there will come a time when its inhibitory influence will cease.

Acute cases, those with acute relapses, and those in which evidences of marked toxemia are manifest, will not respond to this or any other treatment, and as a rule any x -ray exposure whatever is contraindicated.

As final suggestions, caution is advised against stopping treatment too soon, and against allowing the patient to take very long intervals of rest while active treatment is in progress. As a rule we have found daily or almost daily applications advisable, but occasionally there may be special contraindications against such frequency.

4238 PINE STREET.

THE TREATMENT OF HAY-FEVER.

BY RALPH GRACE, M.D., NEW YORK.

It is not my purpose in this short paper to discuss the etiology of hay-fever, though we may all agree that the exciting cause is due to substances floating in the air, particularly the pollen of flowering grasses and cereals; and that the main predisposing cause is a diseased condition of the nasal mucous membrane. As the object of this paper is to describe the treatment of this distressing disorder, I shall not take up time in discussing the many peculiarities of the symptomatology of this disease, but shall limit myself to describing the mode of treatment of this area of the nasal mucosa, as the presence of this local disease is the first factor in the etiology of an attack of hay-fever, and the proper restoration or cure of this area renders the patient insusceptible to conditions previously exciting the attacks.

That the violent bronchial spasm associated with this disease is immediately relieved by the application of cocaine to the

nasal mucous membrane shows that this symptom of hay-fever must be reflex, for we know that stimulus, either electrical, mechanical, or chemical, to the nasal mucosa has a powerful reflex action on respiratory muscles, as is shown by its use in stimulating respiratory failure.

Treatment by actual cautery and caustic chemicals has been advised and carried out by different operators, but I believe that any operation leaving scar tissue is apt to be dangerous and to be avoided if possible, particularly when we have a more simple and as efficacious a method, free from the danger of operation and troublesome hemorrhage. Treatment should be begun before the attacks occur, but as patients often wait until the onset of the disease before applying for relief, many cases must be treated during an attack. In my first cases my treatment of the membrane was similar to that I had used in treating in-

flammatory and infected areas elsewhere, namely, with the use of nitrate of silver in solutions of different strength, and while the results were most pleasing, it was rather painful and irritative, particularly at the beginning of the treatment. I commenced with a solution of one-tenth of one per cent, and gradually increased the strength as the treatment progressed; but notwithstanding the splendid results that were obtained with the silver nitrate, I wanted to find an agent that would accomplish this same purpose without the extremely painful reaction that the nitrate of silver caused. I tried several of the silver preparations, and found one of them to answer admirably, the silver nucleide called nargol. My method of using this drug is as follows:

A two-per-cent solution is first used and thoroughly applied to the congested and sensitive area of the nasal mucous membrane up to the entrance of the antrum, using a very thin applicator. This treatment is continued every third day until the membrane assumes a normal appearance and the sensitiveness disappears. In extremely sensitive cases I have used a 10-per-cent solution of cocaine hydrochloride before treatment, placing the pledget of cotton saturated with the solution between the congested membranes.

Immediately the sensitive area is touched there is a rapid congestion and lachrimation of the eye, and this I have controlled largely by a few drops of a 1:5000 solution of adrenalin chloride instilled in each eye before the treatment was commenced.

After the first treatments, when the hypersensitiveness becomes slightly lessened, I use a rather thicker piece of cotton saturated in the solution of nargol, applying it between the congested membranes as high up as possible, and allowing it to remain for a period of ten or fifteen minutes. With this method I have obtained splendid results in the cessation of all the unpleasant symptoms even in some of the oldest and well-established cases. In ten cases of great severity treated in this manner after the onset of the disease, the entire course was prevented without further medication of any kind. I believe that a large majority

of cases may be thus prevented, and with proper continuation of the treatment a cure effected.

Case 1.—A young lady residing in a small town in the country was treated by me in June, 1906. Her attacks generally commenced some time in May, and from the commencement of an attack she was in great distress until the end of summer. The sneezing, accompanied with discharge from the eyes and nose, commenced early in the morning on rising, and the least exertion would bring on an attack.

One of the most painful symptoms in this case was the intense itching of the eyes; they appeared as one red mass, the congestion being so severe. On examination I found the nasal mucous membrane extremely congested and very sensitive. The inferior turbinates were not enlarged and the passage was quite free. The treatment was as described, commencing with a two-per-cent solution of nargol, continuing every third day for six weeks. After the first few treatments she was in comparative comfort, and at no time during that summer did she have any severe symptoms. At certain times there would be a slight congestion of the eyes, which disappeared after a few more treatments, and the patient passed through the next summer without an attack.

This patient resided in a location surrounded by vegetation of all kinds, particularly of roses and other flowers, while grasses and grains of all kinds were grown in the surrounding fields.

Case 2.—A young man fourteen years of age residing in New York City. His attacks commenced generally in the latter part of May or the first of June, and the symptoms were almost entirely limited to the congestion and itching of the eyes. Very little nasal irritation or discharge existed, but the irritation of the eyes was sufficient to cause him considerable distress, and he had been taken to the different resorts for the summer.

On examination a very slight area of congestion was found in the nasal mucous membrane high up at the entrance of the antrum. Treatment same as in the previous

case, and the result was freedom from further discomfort during that summer.

Case 3.—A young lady who suffered during the summer months whenever she drove behind a horse, or in fact came very near the animals. Her symptoms were typically those of hay-fever, a congestion and lachrimation of the eyes and discharge of serum from the nose.

On examination the typical area of sensitiveness was found and the same treatment used, which resulted in a perfect cure, and during the latter part of that summer, no matter how much she exposed herself to the same source of irritation, there was no recurrence of the attacks. In this case exposure to the pollen of flowers or grasses did not affect her, and I mention this case as being one of the peculiar ones that are often met with.

Case 4.—A gentleman, thirty-five years of age, suffered severe attacks of hay-fever and hay-asthma for several years. His best relief was obtained by making a voyage to Europe or a trip to the White Mountains,

but at times even on the sea on the first or second day out he would have attacks of more or less severity. His nose was perfectly normal in structure, but there was a large congested hypersensitive area on each side. The same treatment was applied as regularly as possible every third day. As the relief of the first few treatments was so great, the patient went out of town on business and omitted treatment for about three weeks; he had no return of the asthmatic attacks, but suffered somewhat from the nasal discharge and eye irritation. On continuing the treatment relief was complete.

In these few cases, as in most of those examined, I found the nose to be normal in structure. One case had a perforated septum, and in one or two cases the inferior turbinates were more or less slightly enlarged, but the passage free, and while I think irregularities in the structure of the nose may aggravate the disease, I do not consider it as a factor.

54 WEST 55TH STREET.

DIAGNOSIS AND TREATMENT OF CEREBROSPINAL SYPHILIS.

BY GEORGE E. PRICE, M.D.,

Associate in Nervous and Mental Diseases in the Jefferson Medical College of Philadelphia.

Symptoms of cerebrospinal syphilis may develop during the secondary period of the infection, or at any time subsequently. In the majority of cases, however, the symptoms appear during the first year or two of the disease. The onset of the symptoms may be sudden or gradual, rarely abrupt. As a rule there are at least some premonitory warnings, the lesion rarely developing to a considerable extent in less than a week. We have but to glance at the pathology of syphilis in the tertiary stage to realize that the symptoms resulting from involvement of the central nervous system may be infinite in variety and protean in their manifestation. The inflammation of the blood-vessel walls, thrombosis with softening, infiltration, or gumma formation, may occur at any point in membrane, brain, and cord, thus giving rise to the multiplicity of symptoms so characteristic of this disease.

It is unusual in syphilis of the nervous

system to find a case which does not have both cerebral and spinal symptoms. However, either form may occur alone, isolated spinal symptoms being more infrequent than cerebral symptoms without associated spinal manifestations.

Before the onset of the special phenomena there is usually a period characterized by general symptoms; these are headache, disturbance of sleep (insomnia or somnolence), impairment of memory, slowness in thought and speech, irritability and depression. A gradual loss of flesh and strength is also frequently observed.

This period is of variable duration and is more commonly present in the cerebral form.

Coming now to the special symptoms, we will for convenience consider first those cerebral in origin.

While headache has been mentioned under the head of general symptoms, the

specific headache resulting from meningeal infiltration is so characteristic of the disease as to deserve special description. The syphilitic headache is of extreme severity, constant, more or less diffused, and worse at night. It is also the most common symptom of cerebral syphilis, which is readily explained by the fact that the meninges, owing to their vascularity, are invariably the site of syphilitic lesions.

Gower says: "That syphilis causes chronic meningitis is one of the surest facts of medicine."

As the basilar meninges are most frequently affected, it follows that disturbance of the cranial nerves is common; of these, the nerves of the eye (optic, motor oculi, and abducens) stand first in order of frequency of involvement, and indeed it is rare to have cerebral syphilis without some form of eye disturbance.

The symptoms resulting from disturbance of the ocular nerve group are ptosis, strabismus, pupillary changes and alterations of the visual fields; optic neuritis is not infrequent and may lead to atrophy and blindness.

The pupillary changes, inequality, irregularity, and stasis or rigidity are most important from a diagnostic standpoint, a rigid pupil being especially significant of a specific lesion.

Palsies of the external ocular muscles are frequently intermittent at the onset, this irregularity or evanescence being also suggestive of syphilis. Next in order of frequency of involvement come the trifacial, facial, and auditory nerves, and lastly, those having bulbar origin—the glosso-pharyngeal and vagus. Unilateral palsy of tongue, palate, and vocal cord can usually be traced to syphilis.

Inflammatory changes in the blood-vessel walls with thrombosis may give rise to the so-called vascular accidents, the apoplectic-form attacks, with resulting monoplegia, hemiplegia, aphasia, etc., depending upon the site of the lesion. Epileptiform attacks, usually Jacksonian in type, may result from gummata which impinge upon the cortex. Indeed, as a gumma may develop in any

part of the brain, any variety of focal symptom is possible.

Syphilis of the spinal cord may assume any form of spinal disease. As in cerebral syphilis, the meninges may be affected and involve the spinal nerve roots, although this is by no means so frequent as cranial nerve involvement. A familiar type is the cervical pachymeningitis hypertrophica.

When the cord itself is affected the symptoms may be sensory, motor, or trophic, alone or in combination, depending upon the site of the syphilitic process. Thus tabes, spastic paraplegia, syringomyelia, etc., may be closely simulated.

By far the most common type of spinal syphilitic disease is the so-called "Erb's spinal paralysis" with the syndrome of spastic paralysis, with exaggerated reflexes, ankle clonus, Babinski's sign, bladder disturbance, and paresthesias, such as numbness, tingling, coldness, etc.

In considering the difficulties of diagnosis we are confronted by the facts, so well expressed by Gower, that "most syphilitic processes have their analogues in processes that are not syphilitic," and that "there are no symptoms, and no combinations of symptoms, produced by syphilis that are not also produced by other causes."

The typical cases of cerebrospinal syphilis would be somewhat as follows:

History of a chancre, followed some months later by the symptoms of headache, constant, severe, worse at night; mental irritability or dulness; history of double vision, intermittent; some difficulty in walking, some bladder disturbance, also a feeling of numbness or coldness in the lower extremities. Upon examination would be found a rigid pupil, weakness of some of the extra-ocular muscles, weakness of the lower extremities with exaggerated reflexes, and ankle clonus or Babinski's sign. Such a case would be easy of diagnosis, but not infrequently cases are found in which diagnosis becomes more difficult. Multiplicity of symptoms is found in insular sclerosis, but the absence of specific history and the presence of some combination of intention tremor, nystagmus, scanning speech, and

optic atrophy in this disease aid in the diagnosis. It is perhaps in the vascular accidents of syphilis that the greatest difficulty in diagnosis is experienced. Here the history of the onset is often of value, more than half of the specific cases being preceded by headache. Other points to be considered are the age of the patient (under forty-five years), the absence of cardiac or renal disease, and the history of specific infection. In a cortical lesion with epileptiform attacks the diagnosis must be made from true epilepsy. It should be remembered in this connection that idiopathic epilepsy developing after the age of thirty is rare.

The so-called "therapeutic test" is often misleading, as not infrequently the symptoms resulting from brain tumors not of specific origin show marked amelioration following the administration of mercury and the iodides.

The prognosis of cerebrospinal syphilis is variable. This is readily appreciated by a consideration of the pathology. Should the inflammatory process be combated promptly and vigorously before destructive or degenerative tissue changes have occurred, the outlook for recovery is good. In a long-standing case the probability of secondary degenerative changes makes the prospect for complete recovery a poor one. Occasionally even an early case is found which fails to respond to treatment, while on the other hand cases of many years' standing have been known to make remarkable improvement; these, however, represent the extremes, the exceptions.

In cerebrospinal syphilis it matters not where the lesion is located or what its character—it should be met with an energetic course of mercury and the iodides.

Some neurologists favor one of these drugs to the partial exclusion of the other, while many strongly advocate the use of both. For the average case a good plan is to first give a course of mercury and then follow with an iodide. A practical and satisfactory method of administering mercury is to order inunctions of the mercurial ointment. These should be commenced in the strength of 3ss to 3j daily, or every other

day, increasing to 3ij daily, which is usually sufficient. The rapidity with which it is increased would depend upon the urgency of the case. The ointment should be thoroughly rubbed into the skin of the thorax under each axilla, or inner part of each thigh, alternating, the skin having been previously prepared by a warm sponge and a hard rubbing. The ointment should be discontinued as soon as the breath becomes heavy or the gums show the slightest tenderness. After an interval of a week or ten days iodine may be substituted, being administered in the form of a saturated solution of potassium iodide, or if the stomach shows signs of irritation, of sodium iodide. These solutions may be given in doses of from 5 to 10 drops in water or milk, after each meal, increasing from 3 to 5 drops every two or three days until the patient shows signs of having reached the physiological limit. When this point is reached all specific medication should be discontinued and the general condition of the patient looked after. Hydrotherapy, massage, and tonics are of value. After several weeks a second course of mercury and the iodide may be given if any tendency toward recurrence of the symptoms should appear, or after a longer interval as a matter of prophylaxis.

Many clinicians give mercury and the iodide together from the onset of the treatment, routinely; this should always be done when the symptoms are urgent. Mercury may also be given hypodermically and intravenously.

The following formula of Lambkin is one of the best for hypodermic use:

Metallic mercury, 1 part;
Lanolin, 1 part;
Carbolized olive oil (2 per cent), 1 part.

The dose is 5 to 10 minims once weekly, injected deeply in the muscles.

It is well to remember that while treatment of cerebrospinal syphilis should be thorough and energetic, the effect of the drugs should be closely watched, as the excessive use of either mercury or the iodides will be distinctly harmful.

THE DIFFICULTIES AND DANGERS ATTENDING THE USE OF THE METRIC SYSTEM IN PRESCRIBING.

BY E. QUIN THORNTON, M.D.,

Assistant Professor of Materia Medica in the Jefferson Medical College.

The adoption of the metric system to the exclusion of all other systems of weights and measures, in most foreign countries, its acceptance as one of the legal standards in our own country, and its use for describing the drugs and in manufacturing the preparations of the United States Pharmacopœia, make it necessary for physicians to familiarize themselves with it, so that if they do not employ it in prescribing they may at least be able to comprehend the writings of others who do.

Advocates of the system urge that it should be used in prescribing, while some enthusiasts insist that its use should be made compulsory. It is hardly likely that the system would have such earnest supporters if it did not have merit. If, however, it possessed all the advantages ascribed to it, and no serious defects, it is extremely probable that it would have supplanted the apothecaries' weights and measures ere this time.

The merits claimed for the metric system are:

That every weight and measure bears a relation to the initial unit, the Meter, which is a fixed and unvarying measure of length, being the $1/40,000,000$ part of the polar circumference of the earth. Measures based upon such a natural and indestructible standard, if lost or destroyed, could be restored without fear of alteration.

The second claim is that the ready method of changing from one denomination to another by the use of the decimal point makes the system both simple and convenient to use.

The third claim is that the nomenclature used in designating the multiples and divisions of the several units is uniform, and that the name denotes the position of the measure or weight in the decimal scale.

The fourth advantage claimed is that its almost universal adoption makes it an international system.

Discussing in order these several claims, it must be admitted that the standard measures preserved in all countries might be lost or destroyed, and that in case of such an occurrence the metric measures are the only ones which could be restored with certainty and precision. Such accidents have happened to the weights and measures heretofore in use, but they are extremely unlikely to recur.

The claim of simplicity and convenience in changing from one denomination to the other by the use of the decimal point is to my mind more than counterbalanced by the possibility of making serious errors by misplacing the decimal. Such errors have occurred not only from lack of care, but from defects upon the paper written upon. Few of us would sacrifice safety for convenience. Furthermore, that the number ten cannot be divided more than once without producing a fraction is a defect of the metric system which inheres to the decimal principles of arithmetic. Thus: $10-5-2.5-1.25-.625$.

The uniformity in the nomenclature, so far as it applies to the names and the position in the decimal scale of the multiples and divisions of the several units, is interfered with by changing the name of the milliliter. The thousandth part of a Meter is called a millimeter; the thousandth part of a Gramme is called a milligramme; but the thousandth part of a Liter, which in reality is a milliliter, is called a cubic centimeter. This name is entirely unsuited for a measure of capacity. Furthermore, there are no names which apply to quantities less than a cubic centimeter, which is about 16 minims. The approximate equivalent of the minim being

.061 Cc., it must be read sixty-one one-thousandths of a cubic centimeter, a rather cumbersome term.

The decimal point followed by numerals is usually understood to indicate a definite subdivision of the metric units, whereas in the measurement of capacity it is usually employed to indicate subdivisions of the cubic centimeter, which is not the unit of capacity. The Liter is the unit of capacity, but is too gross a quantity for convenient use in prescribing.

With the fourth contention, that its almost universal adoption makes it an international system, we agree.

Another disadvantage of no little consequence is to be found in the similarity of the abbreviations used to designate different denominations of the several units: Mm. is the abbreviation for Myriameter, ten thousand Meters, while mm. is the abbreviation for millimeter; Dm. signifies ten Meters, and dm. a tenth of a Meter; Mg. is the abbreviation for ten thousand Grammes, and mg. a thousandth part of a Gramme; Dg. for Dekagramme, and dg. for decigramme. Not only are the same letters used in abbreviating these different denominations, but there is considerable similarity in the sounds of the terms when spoken. Mistakes are therefore likely to occur when the terms are written in an abbreviated form, and also when spoken.

The strongest argument against the use of the system by those of us now practicing medicine is that we have learned our doses in the apothecaries' system, and should we decide to discard that and use the decimal system, we should still continue to think in the older system, but transpose to the newer. In prescribing this would immediately involve a double set of calculations, a condition attended by a degree of uncertainty.

As it is almost impossible to convert either system into the other with exactness, we must employ approximate equivalents. None but an expert mathematician can make the calculation mentally if the closest ap-

proximate equivalents are used; therefore convenient approximate equivalents less difficult of calculation are usually selected.

The following tables give the nearest exact equivalents, and also the commonly used quantities employed:

APPROXIMATE TABLE OF WEIGHTS.

<i>Convenient Approximate.</i>	<i>Nearest Approximate.</i>
1 gr. = Gm. .065	Gm. .0648
15 gr. = Gm. 1.00	Gm. .972
1 3 = Gm. 4.00	Gm. 3.888
1 3 = Gm. 30.00	Gm. 31.103

APPROXIMATE TABLE OF MEASUREMENT OF CAPACITY.

<i>Convenient Approximate.</i>	<i>Nearest Approximate.</i>
1 minim = Cc. .06	Cc. .0616
15 minim = Cc. 1.00	Cc. .924
1 fl 3 = Cc. 4.00	Cc. 3.697
1 fl 3 = Cc. 30.00	Cc. 29.573

WEIGHTS.

Loss and Gain in Single and Multiple Doses.

- 1 gr., a gain of 2/10 mg. = 1/320 gr. in each dose, in ten doses 1/30 gr.
 15 gr., a gain of 28 mg. = 7/16 gr. in each dose, in ten doses 4 1/4 gr.
 1 3, a gain of 112 mg. = 1 9/10 gr. in each dose, in ten doses 19 gr.
 1 3, a loss of 1.103 Gm. = 17 gr. in each dose, in ten doses 170 gr.

MEASURE OF CAPACITY.

Loss and Gain in Single and Multiple Doses.

- 1 minim, a loss of .0016 Cc. = 1/40 minim in each dose, in ten doses 1/4 minim.
 15 minims, a gain of .076 Cc. = 1 1/4 minims in each dose, in ten doses 12 1/4 minims.
 1 fl 3, a gain of .303 Cc. = 5 minims in each dose, in ten doses 50 minims.
 1 fl 3, a gain of .427 Cc. = 7 1/2 minims in each dose, in ten doses 73 minims.

By referring to the tables it will be noted that in converting grains and drachms into their approximate metric equivalents there is an increase in quantity, while there is a decrease when ounces are converted into Grammes. In using the measures of capacity, the quantities substituted for minims are less, and those for the fluidrachm and fluidounce are greater. If we use both solids and liquids in the same prescription, we create still further uncertainty as to the exact doses prescribed, thereby sacrificing accuracy and precision.

If the metric is to be used in prescribing, we must learn and teach the doses in that system, and discard the old; we must think in that system, and not attempt to transpose from one to the other.

THE RATIONAL TREATMENT OF BLEPHARITIS.¹

BY AARON BRAV, M.D.,

Ophthalmologist to the Southern Eye Clinic; Clinical Assistant to the Wills Eye Hospital, Philadelphia.

Blepharitis is a very common disease which the general practitioner is called upon to treat. The disease occurs in both sexes, young and old, but it is more common in childhood and adolescence. Unhygienic surroundings and errors of refraction are important factors in the causation of the various forms of this disease. Some occupations predispose to it, so that weavers, tailors, watchmakers, and dressmakers are often sufferers from this form of ocular disease.

Blepharitis from the clinical as well as from the therapeutic point of view is best subdivided into various forms: (a) Simple hyperemia; (b) blepharitis squamosa; (c) pustular or ulcerative blepharitis; (d) eczematous blepharitis.

Simple hyperemia is as a rule caused by some errors of refraction and is to be found in those classes of patients who do an excessive amount of close work, such as watchmakers, bookkeepers, dressmakers, tailors, and especially is it seen in people who follow their vocation under insufficient illumination. Persons addicted to alcohol and excessive users of tobacco are subject to hyperemia of the lids. It is very frequently found in myopic patients, and especially in people wearing overcorrected lenses obtained from the advertised opticians.

The squamous form of inflammation is characterized by the presence of small thin scales upon the reddened margins of the lids. The conjunctiva shows some congestion.

Squamous or marginal blepharitis is a seborrhea of the lid and often accompanies seborrhea of the scalp. The cilia are often loosely set and may fall out, but they soon grow back again. There is no breaking down of the tissues of the lid and the margins are not ulcerated. Characteristic of the disease is the marked itching and a sensation of burning in the lids, often giving rise to the development of styes. The scales are

removable without leaving a bleeding surface behind. This form of blepharitis usually accompanies a chronic form of conjunctivitis, and is often found in people with a constitutional dyscrasia, with some nasopharyngeal disease or obstruction and inflammation of the tear duct. It is rather a common condition in children following some of the exanthematous fevers.

Ulcerative or pustular blepharitis is the most severe type of lid inflammation. Of course this form also begins as a simple marginal blepharitis which ultimately results in infection of the cilia, with consequent ulceration. The lids are covered with yellow crusts, the lashes are melted together; separating the lids produces pain and reveals the ulcerated condition, the surface of which is bleeding. Prior to the destruction of the tissue some circumscribed pin-point abscesses can be seen at the margin with a yellow elevation, in the center of which is a cilia. The course of the disease is rather long and is apt, if not treated in time, to leave some sequelæ in the form of trichiasis and ectropion or eversion of the puncta.

The eczematous inflammation of the lid is also of the ulcerative type which extends to a larger area, and is always accompanied by eczema of the face and scalp. This form, while not rare in children, is also found in adults, where it is very resistant to treatment; in many cases it is beyond the control of any therapeutic agent and remains as long as the eczema of the scalp is present.

In considering the therapeutic measures in the treatment of the various forms of blepharitis, we must first, of course, determine if possible the causal factor and remove it. It is also essential to know the type of the disease we are called upon to treat. In a general way hygienic treatment is of great value. Patients suffering from blepharitis should be advised to stay away as far as possible from overcrowded, smoky

¹Read before the Eastern Medical Society.

places, should not overtax their eyes, and should not read or do any work requiring close application of the eyes under insufficient illumination.

In simple hyperemia of the lids, where the chief cause is an error of refraction, a proper correction of such ametropia is of course essential. It is needless, I think, to emphasize that these cases should be refracted only under a cycloplegic. In the majority of cases this will suffice to remove the irritation. Errors of refraction must be corrected in all forms of blepharitis, for while they are not usually the direct cause of the disease, they nevertheless, by their continuous irritation, prolong the disease and sometimes interfere with its permanent cure.

Blepharitis marginalis is usually accompanied by conjunctival inflammation, to which condition we therefore must direct our attention. In these cases it is well to employ as a local application by the physician a 25-per-cent solution of glycerite of tannin. This therapeutic agent acts as a mild astringent to the mucous membrane. It is an irritant and causes a burning sensation in the eye lasting several minutes, and is then followed by a sedative effect. A boric acid solution as a mild antiseptic eye-wash should also be prescribed for home use, as for example:

℞ Acidi borici, gr. xxx;
Zinci sulphocarbollatis, gr. ij;
Aquæ camphoræ, ℥ ss;
Aquæ destillatæ, q. s. ℥ iij.

Signe: Bathe the eyes three times daily.

Massage to the affected lid is a very important therapeutic measure in the treatment of this disease. It is best applied by means of an ointment. Vaseline is usually employed as the base to carry some medicinal agent. Lanolin, however, is much easier absorbed, as it is an animal fat. The effect of massage to the lids is to relieve the venous congestion, by stimulating the lymphatics; the capillaries as well as the lymphatic channels empty themselves more readily and thus facilitate the absorption of the inflammatory products. Massage to the lid is best given by a series of gentle stroking movements made upon the closed

lids with the index-finger carried horizontally from the inner to the outer angle of the palpebral fissure. These movements should last from three to five minutes. The ointment is at the same time also valuable as a cleansing agent; it softens the scales so that they are easily removed. It is best to apply this therapeutic agent at bedtime, so that the scales can easily be washed off in the morning. The yellow oxide of mercury seems to enjoy a great reputation as a medicinal ingredient to be incorporated in the ointment. It seems to have a favorable influence on the tissues of the lid.

℞ Hydrargyri oxidi flava, gr. ss;
Unguentum petrolati, ℥ j.

Sig.: Apply at bedtime as directed.

In some cases salicylic acid ointment seems to have a more favorable action; especially is this the case when the blepharitis is accompanied by considerable itching.

℞ Acidi salicylatis, gr. j;
Lanolini, ℥ j.

Sig.: Apply as directed.

In some cases in which the itching is very marked I have used a tannic acid ointment with excellent result.

℞ Acidi tannici, gr. ij;
Petrolati, ℥ ij.

Sig.: Use as directed.

Occasionally the addition of cocaine is of great service to relieve the itching.

℞ Acidi tannici, gr. ij;
Cocainæ hydrochlorid., gr. j;
Petrolati, ℥ ij.

The tannic acid ointment in some cases produces marked irritation, especially where there is a broken surface, and should therefore not be long continued. Itching is sometimes intolerable; this is especially true in cases in which the glands of Meibom contain some inspissated material. This material can be expressed by pressing the lids together between two blades, when the inspissated mass will come out like a thin small worm; it is, however, soon reformed, and the case is very resistant to any form of treatment. The application of a one-per-cent solution of silver nitrate to the conjunctiva in these cases is very valuable.

Those cases that are caused by some nasal

or pharyngeal condition require, of course, attention to those organs.

The constitutional aspect in the treatment of these cases must not be overlooked. There is usually an atonic condition present which requires treatment. Scrofulous patients should receive proper constitutional treatment. The gastrointestinal canal should be kept as far as possible in proper condition. For the atonic state I usually employ the elixir of iron, quinine and strychnine with good result.

The ulcerative variety, while the most severe form, usually yields readily to treatment. Of great therapeutic value in this class of the disease is hot applications to the lids. These applications stimulate the parts, and after the crusts have been removed they cause a proliferation of the cells of the part and thus aid nature in the healing process. Diseased cilia in the ulcerative type should be carefully removed, and in the pustular type it is best to incise the pustules and thus hasten recovery. The application of a one-per-cent solution of nitrate of silver is an excellent measure to stimulate the parts to

recovery. The treatment of blepharitis should be prolonged, as the disease has a tendency to recur. Syphilitic and rheumatic patients should receive the well-known constitutional treatments so as to aid us in our efforts to combat the disease.

Eczematous blepharitis, and by this I understand a condition of the lid accompanying an eczema of the face and scalp, often resists all known measures, but the above mentioned agents judiciously employed will ameliorate the condition. It is a part of wisdom in these protracted cases to call to our aid the experience of the dermatologist. Strict hygienic rules should be enforced, reading by artificial light should be forbidden; crowded places, such as saloons, theaters, club-houses, should be avoided as far as possible, for they all have a deleterious influence upon the disease. A careful exploration of the lacrimal passages is essential in all forms, and proper treatment instituted if found necessary. The physician will find that in the majority of cases the outlined treatment will entirely cure the disease.

THE STATUS OF THE ANESTHETIST.

BY W. HAMILTON LONG, M.D., LOUISVILLE, KY.

Roberts, in the *THERAPEUTIC GAZETTE* of February 15, 1908, writes interestingly and thoughtfully of "The Anesthesia Peril in American Hospitals," and his observations and conclusions should be read and pondered by the whole profession. He properly advocates special training in the administration of anesthesia and better fees for the anesthetist. He states as his conviction that "no powerful drugs are given so carelessly, so recklessly, and by such incompetent hands as anesthetics." This observation relates to anesthesia administrations in the hospitals of the large cities, where the work for both private cases and patients operated on by the attending staff is performed by junior residents who, however painstaking and conscientious, are without previous training, many not even having had opportunity for observation, as during their

college course they probably had no instruction in anesthesia; in fact in many, if not most, of the medical colleges the administration of anesthetics as an important branch requiring special teaching is completely ignored.

Dr. Roberts would encourage men to specialize in anesthesia. His scheme for remuneration is on a basis of 10 per cent of the surgeon's fee—a fair percentage, though probably not practical as a hard and fast rule. He rightly says that a substantial income would accrue to the trained anesthetist in any large city who would announce himself as a specialist in this work. He anticipates a possible drawback by stating that such a man would stand ready to render charitable service as willingly as the surgeon if called upon.

Throughout his article, however, Roberts

fails to strike the real key-note, the chief reason to my mind that a man hesitates to become a specialist in anesthesia, viz.: he has not as yet, considering the attitude of both surgeon and laity and taking the country over, the recognition for himself and his work—the individuality that is necessary if he is to give to his specialty the same dignity and standing that is accorded to other specialties in medicine. So long as a man knows he is considered an “assistant”—the word in its subordinate sense is not in accord with the independent American spirit—and until recently a sort of minor assistant at that, so long as his special line of work is not looked upon with the same respect as the work in any other specialty, and so long as the training for the work and responsibility assumed in its performance are alike unappreciated, so long will a man hesitate before making a specialty of anesthesia.

The present condition is not bad. The status of the anesthetist is in the process of evolution, and the tendency is decidedly toward the ideal. It has been but a few years since the administration of the anesthetic was left to a mere spectator, often a student asked at the eleventh hour to do the work. The idea that any special skill was required was not entertained. Not until the present surgical era was in full swing was the danger of anesthetic agents fully appreciated and the consequent demand established for a man experienced in their administration. It may even be said that not until the advent of abdominal surgery was much attention paid to anesthesia administration, as most of the surgery prior to the age of asepsis was of an imperative nature—emergency surgery—for which what we now term “surgical anesthesia,” *i.e.*, complete muscular relaxation, while desirable, was not necessary. Mere unconsciousness, with of course insusceptibility to pain, or rather, as I believe, that degree of anesthesia sufficient to obliterate the memory of pain—for there is certainly pain if the patient tries to struggle at the touch of the knife—was sufficient.

For the surgery of to-day, however, the degree and kind of anesthesia required and

demand is radically different. The surgeon that opens the belly must have muscular relaxation, and he wants a man at the head of the table in whom he has confidence. He wants one to whom he can entrust the anesthesia, dismissing from his own mind any worry and anxiety along that line, that he may become absorbed, as he will, in attending to his own work at the field of operation. If something goes wrong so far as the general condition of the patient is concerned, if shock supervenes, respiration stops, heart “goes bad,” or any one of the probable emergencies arise, he knows the careful, trained anesthetist, with a full appreciation of his responsibilities and duties, will detect it early and take the proper steps to overcome it. This feeling of security that the trained anesthetist gives the operator is the saving of much mental strain and anxiety to the latter.

The man who would specialize in anesthesia, and would demand a just respect for and appreciation of his specialty, must have the hearty and sincere coöperation of the surgeon. He should be an equal and not a subordinate in the operating room. He should charge and collect his own fee. The patient should understand that he was engaged by the surgeon because the latter had confidence in his skill, judgment, and general ability to do the work. The surgeon having selected an anesthetist in whom he has this confidence, should, after introducing him to the patient, relieve his own mind of further responsibility and anxiety in so far as the anesthetic is concerned. The anesthetist assumes the responsibility for the anesthesia, and uses his judgment, after a careful examination of the patient as to previous history, present condition, etc., in the selection of method and agent. This is the ideal relationship between the surgeon, anesthetist, and patient, and the one to which we are surely, if slowly, coming.

We have lagged behind some of the European countries in the matter of anesthesia. The Proceedings of the London Society of Anesthetists is interesting reading. At present there are but few associations in this country interested in anesthesia.

New York has an association of anesthetists, before which papers bearing on all the phases of the work as well as reports of cases, etc., are read and discussed.

A society, or an association section especially interested in anesthesia, one before which papers could be read and discussed, and cases, experimental and research work reported, would stimulate interest in this subject and be of great ultimate value to the profession and the public.

To briefly recapitulate, the author would close with the following summary and suggestions:

1. There is a field in every large city for anesthesia specialists. The work, where not done exclusively by internes, is divided up frequently among young men who take no particular interest in it, and consider it a part of the "drudgery work" incident to getting a start.

2. Anesthesia administration should be taught by lectures and demonstrations in all medical colleges. Every surgical clinic should also be a clinic in anesthesia. The senior class should be taken, one or two at a time, into the anesthesia room, that they could see the work from the start, the various methods employed by the anesthetists, the various preliminaries to general anesthesia, etc.

3. The surgeon should coöperate with the anesthetist in bringing his fee up to a figure commensurate with the responsibility assumed and the skill required.

4. There should be established a section on anesthesia in the American Medical Association, before which papers could be read, cases reported, etc. The author believes that the proceedings of such a section would be a revelation, and of keen interest.

SCHAFER'S PRONE-PRESSURE METHOD OF ARTIFICIAL RESPIRATION.

The *Journal of the Royal Army Medical Corps* for May, 1908, contains an article by ARCHER. He says the advantages claimed for Schafer's method are: (1) The ease with which the physical opera-

tions necessary to carry on artificial respiration may be performed—hardly any muscular exertion is required; (2) the efficiency of the gaseous exchange produced by it between the outside air and the air in the lungs; (3) the extreme simplicity of the procedure; (4) the impossibility of the air-passages being blocked by the falling back of the tongue into the pharynx; (5) the readiness with which water and mucus are expelled from the air-passages through the mouth and nostrils; (6) there is no risk of injury to the congested liver or any other organ.

The Prone-pressure Method of Artificial Respiration for a Person Apparently Drowned.—(1) Loosen all clothing about the neck. (2) Look into the mouth and remove any weeds, etc., that may be there. (3) Fold a coat, and place it beside the patient, on a level with the hooks for the belt. (4) Roll patient over on his face on to the coat. (5) Place one of the patient's arms under his forehead, and see that the mouth is not against the ground. (6) Straddle across patient, placing your knees on either side of his hips. (7) Place the open hands on either side of the lower ribs (again the belt hooks are a good guide). Leaning forward, exert firm but not violent pressure on the patient's ribs, then raise your body slowly, at the same time relaxing the pressure with your hands. Repeat this forward and backward movement about every five seconds, or twelve times in a minute. This course must be pursued for at least an hour, or until the natural respirations are resumed.

Remember that not a moment should be lost in performing artificial respiration, after the patient has been removed from the water. Do not give restoratives by the mouth until natural breathing has commenced. Do not raise the patient's head off the ground, except as in (5). Persons who have been some time under water often look as if they were dead when such is not the case, and they may be restored to life by carefully carrying out the above instructions.

EDITORIAL.

ON VITAL PROPERTIES OF MILK AND THE PROTECTIVE PROCESSES IN THE BODY WHICH ARE AIDED BY IT.

In the THERAPEUTIC GAZETTE of February 15, 1908, we published an editorial upon this subject in which we quoted certain researches which indicated very positively that fresh milk, whether obtained from the cow or from the human breast, possessed bacteriolytic properties, or at least, materially interfered with the growth of bacteria. Further, it is known that the carrying out of any process of sterilization, or pasteurization, distinctly decreases the ability of the milk to deal with microorganisms which may enter it after it has been exposed to one of these processes. Since this editorial was published several other papers have appeared upon this important topic. One of these is an exhaustive study by Rosenau and McCoy in the *Journal of Medical Research* for March, 1908. These investigators confirm the researches we have already mentioned. They prove that fresh, raw milk possesses germicidal properties, or at least those of an antiseptic. Thus they found that when milk is kept warm a decrease in the number of organisms which are placed in it occurs within the first eight or ten hours, but that this inhibitive effect upon the growth of bacteria diminishes after this time. When the milk is kept cool the decrease is less marked, but is more prolonged. A considerable proportion of the decrease in the number of bacteria is due to agglutination, and this being the case the bacterial clusters may be to a certain extent shaken asunder, which perhaps explains the results which have been obtained by some investigators whose views conflict. Rosenau and McCoy also note that the polymorphonuclear leucocytes in milk seem to possess the power of phagocytosis, although this function of phagocytosis is not a very important one in the germicidal action of this fluid. They also found that certain

microorganisms were much more readily affected than others by this bacteriolytic influence. Thus, the typhoid bacillus and the staphylococcus pyogenes aureus were restrained in their growth, but the paratyphoid bacillus A or B was not restrained. When milk is diluted the agglutination effect is diminished rather than the germicidal effect. In other words, to sum up their conclusions, the germicidal action of blood and milk resemble each other in some particulars, although blood serum acts much more quickly and more powerfully than milk.

It is interesting to note in this connection that freezing milk for ten minutes and then thawing it does not affect the phenomenon in question. Indeed, in one experiment, when the freezing was maintained for forty-eight hours, the restraining action upon typhoid bacilli was not affected. On the other hand, boiling milk, or heating it above 80° centigrade, destroys its germicidal properties. Finally, they found that this action of milk varied in the milk of different animals, and in the milk of the same animal at different times, which would be expected in view of the fact that the germicidal action of blood serum also varies in this manner. They also point out that this germicidal effect of fresh milk cannot be relied upon to keep it pure, but it can be utilized with advantage, along with the use of ice and cleanliness, in maintaining the value of milk as a pure food.

It is interesting to note in this connection that other researches carried out in Europe have a nearly related bearing upon the work of Rosenau and McCoy, of Copland, and others. Thus, it is pointed out editorially in the *Edinburgh Medical Journal* for April, 1908, that the blood of a newly-born baby contains abundant complement which diminishes after birth, but under the influence of maternal nursing rises to the adult level in four or five days, whereas in artificially reared infants the complement

may be markedly decreased, falling in those who are doing poorly and rising in those whose weight curve is satisfactory. It rises promptly in breast-fed and but slowly in artificially-fed children. As the *Edinburgh Medical Journal* well points out, this has much direct bearing upon the well-known fact that breast-fed infants always do better than artificially-fed children, and it quotes the excellent advice to a mother to the effect that if she will nurse her baby for a week or two it will get a good start, advice which has a distinct scientific foundation, because fresh milk is bacteriolytic and provides complemental bodies.

Moro has proved that it is almost impossible to rear young animals if suckling is prevented from the outset. Thus, 80 per cent of guinea-pigs fed from birth on cow's milk died. Of those which remained with the mother only one day, 60 per cent survived, while 90 per cent of those which were suckled for three days could be reared without difficulty. In other words, the colostrum not only possesses value because it is purgative in its nature, but because it is excessively rich in ferment-like bodies. Langer has shown that the cow's colostrum contains enormous quantities of antigens, or substances which evolve specific agglutinins, precipitins, etc. By this means the calf receives the factors which enable it to defend itself against infection; whereas after the third day the antigen content of the colostrum falls, so that if the calf is not fed with colostrum during the first few days of its existence it lacks these important factors in maintaining its life.

Although the researches which are quoted by the *Edinburgh Medical Journal* deal chiefly with the influence of complemental bodies in the maintenance of nutrition, and the utilization of nourishment by appropriate side-chains, according to Ehrlich's theory, it is quite conceivable that these same factors may be of considerable moment in aiding the new-born animal or child in defending itself against the microorganisms which enter its body with its food, or by other channels. In other words, the child

which receives breast milk not only receives nourishment, but also takes into its body a fluid which tends to destroy those microorganisms which may have invaded its digestive apparatus. It also ingests factors which may enable its blood to deal with germs which find access to the blood itself, or to the tissues with which it comes in contact; and last of all it obtains complemental bodies which may aid it in utilizing its food after it is absorbed.

DIGITALIN VERSUS PREPARATIONS OF DIGITALIS LEAVES.

The question which seems to be continually arising in the minds of some practitioners is whether they should employ the galenical preparations made from digitalis leaves, or so-called digitalin. Readers of the *THERAPEUTIC GAZETTE* are probably aware of the fact that the writer of this editorial is strongly of the opinion that when the physician must combat the conditions which arise from cardiac failure it is best for him to employ some preparation of digitalis which represents all of the active principles which the leaf contains. In other words, these principles produce a combined effect upon the circulatory system which no single active principle can possibly produce.

Chemists, all over the world, universally recognize that the composition of digitalis is complex, and workers in the pharmacological laboratories have proved beyond all doubt that no single glucoside or active principle which may be found in digitalis leaves embodies in itself the activity of the leaf. It is quite true that the German and French chemists are continually at war with one another as to the character and purity of the active principles which they isolate from these leaves. It is also true that the French clinicians are particularly fond of employing that form of digitalin which is associated with the name of Nativelle, and that the Germans employ that to which the name of Schmiedeberg is strongly attached. As a matter of fact no one can assert that these two products are devoid of physiolog-

ical action. On the contrary, they undoubtedly act as stimulants to the heart muscle, but the point which we wish to emphasize is that given three patients presenting the same condition, that patient which receives a physiologically tested tincture, fluid extract, or extract, of digitalis leaves will be better treated than the other two, one of whom receives Nativelle's digitalin and the other that of Schmiedeberg. It seems to us that the proposition is very much allied to that of the question as to the usefulness of plum pudding. There can be no doubt that the raisins and other fruits which often enter into this delectable composition are each of them capable, when used alone, of pleasantly stimulating the gustatory nerves. But no one would think of giving any one of the ingredients of plum pudding to an individual with the expectation of producing the same result as if a well-made plum pudding was ingested.

One of the fallacies which underlie this incessant debate is that an endeavor is made to determine the issue by chemical investigation rather than by experiments upon animals, for it is only by the use of digitalis which has been tested upon animals that we can be sure of producing the results which we desire.

This matter is once more brought to the fore by an interesting letter which is contributed anonymously to the *Boston Medical and Surgical Journal* of April 16, 1908. In this letter the excellent results which are reached by the French clinicians who employ Nativelle's digitalin are clearly pointed out, but a more important fact, upon which sufficient emphasis is not laid by many persons, is also discussed, particularly with reference to the extraordinary variation in the dosage of digitalis which occurs in different parts of the world. Thus, in France the dose of the powdered leaves is 0.2 to 0.4 gramme; in Edinburgh we are told that it is 4.0, that the same holds true in London; and that in Roumania 10.0 and 12.0 are doses not infrequently administered. Of course, such variations as this must depend more upon variations in the drug itself than in the

hearts of the patients, or in the minds of the physicians, or, in other words, must depend upon variations in the physiological activity of the drug which is grown in different countries. Brunton long since pointed out that there was a very great variation in the physiological activity in digitalis leaves grown in England, Scotland, and America, and it is generally conceded that English and German digitalis is physiologically stronger than that which is grown in the United States.

That alterations in the physiological activities of this drug must occur as the result of variations in exposure to sunlight and to moisture during the growth of the plant is evident. Then, again, it must be remembered that it is only the leaves of the second year's growth which are supposed to be employed for medicinal purposes, and these leaves must be gathered at the commencement of the flowering period of the plant. Furthermore, the leaves after they have been gathered vary greatly in their medicinal properties, according to the method by which they are preserved. Nearly every pharmacopœia insists that the leaves shall be thrown away after they have been kept for a year. Some pharmacopœias require that only leaves derived from wild plants shall be employed. It is evident, therefore, that not only will different therapeutic effects be obtained from different stocks of digitalis leaves, but that the chemical analysis of digitalis leaves must vary very widely according to the history of the particular samples which are subjected to analysis. From these facts, therefore, it is, we think, evident that the proposition with which we started out, as to the advisability of using the complete drug rather than any active principle which may be isolated from it, must be correct. Indeed the employment of any old digitalis leaves which may be found in a drug store is equivalent to the use of a substance of which almost nothing is known save its origin.

The only way by which we can obtain the results which most patients need is by the use of galenical preparations which have been physiologically tested and their activ-

ity proved before they are placed upon the market. In our experience the employment of digitalis from haphazard sources is not only disadvantageous because the results are uncertain, but because the results vary so much that the physician's judgment as to the exact needs of an individual patient is of little value, although as a matter of fact the skill with which the physician adjusts the dose of a given remedy to the needs of an individual case is one of the most necessary parts of his practice.

**ON THE USE OF HYPODERMOCLYSIS
AND TRANSFUSION IN THE TREAT-
MENT OF CHOLERA AND
CHOLERAIC DIARRHEA.**

It has long been recognized by physicians who have had experience in the treatment of these conditions that patients suffer not only from the toxemia caused by invading microorganisms, but also from the effects produced by the loss of large quantities of fluid from the body. Various methods have been resorted to with the object of supplanting some of this fluid. We have noted with interest an article which is published in the *Indian Medical Gazette*, of Calcutta, for March, 1908, in which Dr. Leonard Rogers advises the use of normal saline solution by transfusion in cholera, and records a series of cases in which he has employed it with excellent results. As he well points out, the extremely feeble and easily compressible pulse of cholera is clear evidence of a greatly lowered blood-pressure, which in its turn accounts for the cessation in the excretion of urine, a cessation which is well recognized as a very dangerous symptom, since it also prevents the elimination of toxins from the body by the kidneys. Rogers has studied the condition of blood-pressure in cholera by means of the Riva Rocci apparatus, and found, as would be expected, that the blood-pressure is always low in well-marked cases, although great variations in different cases take place. During the collapse stage it was commonly found as low as 60 millimeters of mercury, and in some cases fell as low as 50 millimeters. It is at times as high as 70 or 80 millimeters.

but only the very mild or convalescent cases are as high as 90. Rogers used the results obtained in this manner as a guide in the use of saline solution, employing it freely in direct ratio with the lowering of the pressure, and injected the salt solution into the median basilic vein. He found not only that these injections materially raised pressure at the time of their administration, but that this elevation of pressure was maintained, and that patients who started out with a pressure of 65 millimeters not only had their blood-pressure raised to about 100, but after twelve or fifteen hours the pressure not infrequently reached 115 or more. In regard to the quantity of fluid injected, he found that 30 ounces, or even more than this, was often essential, and he advises that in urgent cases the transfusion be repeated at intervals of some hours.

We are interested to note what he has to say in regard to the strength of the salt solution. Some months ago we published in the *THERAPEUTIC GAZETTE* notes indicating that great care must be exercised that the strength of the solution used to combat shock should be exactly correct, or, in other words, isotonic with the fluids of the body. It has usually been considered that 0.7 per cent is normal, but the serum of human beings usually has a tonicity of about 0.8 or 0.9, and it is worthy of note that McCay, of the Indian Medical Service, has found that in the Bengalis the tonicity may be 1.0. Furthermore, it is possible that the use of a saline solution of this strength may be advantageous in that it will tend to retain fluid in the body which otherwise might be lost by purgation, since it is well known that when the fluid in the alimentary canal is below normal tonicity the salts of the tissues pass into it to equalize its strength with that of the tissues; whereas if the fluid in the vessels has a tonicity slightly above that of the contents of the gut, the fluids will tend to pass from the intestine to the tissues to equalize the alkalinity, or, to speak more correctly, the tonicity, of the body fluids.

Rogers found that not only did the blood-pressure rise under the use of transfusion, but that this method greatly relieved the distress from which the patients were suf-

fering, caused a disappearance of their pain and restlessness, and often resulted in the patient falling asleep before the operation was completed. Indeed, Rogers has come to regard great restlessness and cramps as an indication for transfusion. This method also diminished the cyanosis, improved the patient's color, and caused a marked betterment in the breathing and in the force of the pulse.

Since the above text was prepared we have again been interested by a further communication on this subject which appears in the *Indian Medical Gazette* for May, 1908, in which Dr. Rogers and Mr. Mackelvie of the Indian Medical Service record the results which they have obtained by the use of intravenous injections, and recommend furthermore that instead of employing salt solution of the strength which is commonly used, namely, that of about 0.6 or 0.7, a solution twice as strong as this be employed; or, in other words, if common salt is used, in the proportion of about 2 drachms to the pint instead of 1 drachm to the pint, which is the quantity commonly employed.

Whatever may be the theoretical conclusions in regard to the use of hypertonic salt solutions, the practical results which these clinicians have obtained would seem to indicate that their method has value, the more so as they found that a rapid recurrence of watery stools often followed saline transfusion of the ordinary strength and did not recur when the strong solutions were used. They have employed the strong solution with the following results:

In the first place the number of deaths in the collapse stage has been greatly reduced.

Secondly, the rapid recurrence of watery stools after the transfusion is much less common than with normal salt solution.

Thirdly, they report that at one time 12 out of 13 consecutive cases, and at another 11 out of 12, were discharged cured, which is a striking testimony to the value of this method.

The table giving the total number of cases observed both before and after this treatment was instituted still further indorses this plan. The recovery rate in one hospital

without hypertonic solutions was 36.8, and in the same institution with hypertonic solutions 45.0. In another hospital the recovery rate with ordinary solution varied from 27.3 to 63.9, but after hypertonic solutions were employed the recovery rate rose to 72.2. In other words, they consider that by this plan they have diminished the death-rate about one-half. The quantity of fluid which is injected into the vein is of the greatest importance. They assert that one pint is quite useless, and that two pints seldom fully restores the blood-pressure. It is their custom to inject in most cases four pints at a time unless the pulse becomes full and bounding after the use of smaller quantities, and as much as 7 pints of the double strength saline solution in two injections have been given with favorable results. They aim to produce a pressure of about 110 mm. of mercury, as they consider that this is about the normal maximum for the Bengalis. In most of their cases the pressure was well under 50 mm. when the treatment was begun, and in a number of others too low to be estimated. In severe cases they believe that subcutaneous injections are practically useless.

An additional method of treatment which they think is of value is the application of dry cups over each kidney to overcome urinary suppression and uremia. Once the blood-pressure has been firmly reestablished and the watery stools have ceased, they assert that hot-air baths can be safely given if the suppression of urine continues for any length of time.

OXALURIA: ITS SYMPTOMS AND TREATMENT.

It has long been recognized by clinicians that under certain circumstances the urine contains an excess of oxalates, sometimes as the result of ingesting foods which contain a large amount of oxalic acid or its salts, and at other times as the result of various processes in the body itself. Thus, it is well known that rhubarb, spinach, strawberries, and tomatoes are particularly prone to produce oxaluria, although other substances, such as figs, beets, potatoes, tea,

coffee, and cocoa, while containing considerable quantities of oxalates, rarely produce oxaluria. In certain instances, oxaluria develops in those cases in which there is an absence of hydrochloric acid in the gastric juice, or, in other words, when the delay in digestion results in fermentation processes which may give rise to oxalic acid.

The importance of oxaluria from the clinical standpoint may be quite considerable. In some instances the presence of this condition in excess is associated with a marked degree of mental depression, amounting almost to melancholia, which can be relieved by the administration of full doses of freshly prepared nitrohydrochloric acid. Of course, the oxaluria is not responsible for this condition, but is a manifestation of some disorder of metabolism which produces both the mental depression and the excess of oxalates in the urine. In other instances the development of oxaluria is accompanied by distinct evidences of genito-urinary irritation, which sometimes manifests itself in painful urination, and occasionally in a hematuria, and even intermittent albuminuria, or oxalate calculi may form, as is pointed out by Brown in the *Clinical Journal* of January 22, 1908. In still rarer instances more serious conditions arise, and unless the physician is on guard may mislead him into serious errors in diagnosis, as the result of the deposition of oxalate crystals in the kidneys; or because of the irritation of these organs by the oxalates in their elimination, marked renal symptoms develop. Thus, Brown quotes a case of a nervous, overworked youth who suffered from paroxysms of pain in the left side for which no adequate cause could be discovered, either on physical examination or by the use of the x -rays. These attacks were at times accompanied by hematuria. The presence of a stone in the kidney was suspected, and a surgeon operated upon the kidney, but found nothing. An examination of the urine, however, revealed abundant crystals of calcium oxalate. Recently we have seen in our own practice a similar case.

The treatment which Brown advises is, of course, the avoidance of foods containing

oxalates and the use of magnesia in considerable quantities, since this aids in their solubility. Exercise in the fresh air, whereby metabolic processes are improved, and the free drinking of pure water are also advantageous. Sometimes the use of potassium citrate in this water in considerable quantities will also be advisable, since the potassium citrate combines with the calcium and forms a double soluble salt. It is interesting in this connection to note that while acid fruits, like rhubarb and strawberries, are interdicted because of the oxalates which they contain, other acid fruits like lemons and oranges are not disadvantageous; indeed, they may actually do good because of the influence of the citric acid which they contain upon the calcium, thereby preventing the formation of calcium oxalate crystals. Brown goes so far as to suggest that certain persons who cannot eat strawberries without the development of oxaluria may be able to eat them if they also drink lemonade which contains no sugar, the sugar being avoided because of the fermentation process which it is prone to develop.

PERFORATIVE PERITONITIS.

Murphy, whose teaching where it has been accepted has revolutionized the previously accepted practices in regard to the treatment of perforative peritonitis, and has changed the prognosis of an affection regarded as almost essentially fatal to one in which under favoring circumstances the outlook is distinctly favorable, has contributed to *Surgery, Gynecology, and Obstetrics* for June, 1908, an exhaustive article upon this subject with which the entire profession should thoroughly familiarize themselves. In the anatomical discussion of the peritoneum it is shown that the endothelium is an unbroken layer of cells having no direct communication with the subperitoneal lymphatics, the latter being embryologically modified veins. Hence the peritoneum is not part of the lymphatic system. It has a tremendous absorptive power, in which both the lymphatics and blood-vessels are concerned, the most active

portion of the peritoneum in this respect being the diaphragmatic and omental areas. This absorption takes place with extraordinary rapidity, and is held to depend upon several factors, among which are mentioned pressure of the abdominal muscles, tonicity, and respiratory contraction. By virtue of the constant contraction and relaxation of the diaphragm, fluid and particles are aspirated from the peritoneum and forced onward; peristaltic activity and vitality of the peritoneal endothelium favor absorption, which is hindered by subperitoneal infiltration, venous engorgement, diminished peristalsis, shallow respiration, lowered abdominal temperature, drying of the peritoneal endothelium, as in exposure during operation, lowered intra-abdominal pressure, and positions of the body which favor gravitation toward the pelvis. The factors favoring absorption are tension, abrasion, and exfoliation of endothelium, acceptable material, and vasomotor paresis.

The protectives against infections are the peritoneal fluid and the plastic powers of the peritoneum; phagocytosis in the peritoneal cavity, the same process in the omentum and in the lymphatic nodes, and phagocytosis and bacteriolysis in the organs. As to the etiology of perforative peritonitis, Murphy points out that in 90 per cent of cases this occurs in one of the two zones of particular danger—*i.e.*, the vermiform appendix, or the region of the pylorus. As to the cause of death in peritonitis, this is attributed as a rule to an overwhelming dose of bacterial toxins. In the section devoted to bacteriology Murphy calls attention to the protection afforded by the staphylococcus albus, which appears first and disappears last in all abdominal infections of intestinal origin.

Murphy gives the details of his treatment of perforative peritonitis in the order in which the pathological processes which cause mortality appear. Since septic absorption is the primary and most frequent cause of death the prevention of absorption is of greatest importance. There is a pre-operative period in which much may be done to retard absorption preparatory to surgical intervention. The patient should

be placed in the Fowler position at his home the moment the diagnosis is made, and kept so until convalescence is well advanced. He should be taken to the hospital in this position to prevent the spreading of the infection to the upper abdomen during transportation; carried to the operating room and operated upon with at least the shoulders well elevated, if the abdomen cannot be approached in the sitting position. This procedure is based on the physiology of peritoneal absorption. Peristaltic rest is secured by withholding food or the application of cold to the abdomen; the use of opiates for this purpose is condemned since they are said to produce a false sense of security and lead to dangerous delay. Gastric lavage may be resorted to immediately preceding operation or when the case is twenty-four hours advanced. In intensely poisoned and cyanotic cases a preoperative intravenous injection of two to four pints of normal salt solution materially improves conditions. Ether is given by the drop method, nor should the anesthesia be started until the patient is on the operating table and all preparations made for the incision. Nitrous oxide gas answers admirably for these operations in expert hands, whilst stovaine spinal analgesia gives complete relief from pain in a short time and stimulates peristalsis. Local analgesia is regarded as a poor substitute for nitrous oxide gas or ether. The incision should be made over the seat of perforation, or when the seat has not been determined, to the right of the median line, as perforations are much more common in the right than in the left half of the abdomen, and the incision can be enlarged upward or downward *ad libitum* without dividing muscle fibers transversely. The leak is closed as rapidly as possible and with the least possible manipulation. The opening of the perforation must never be allowed to remain patent, since the mortality from simple drainage is so great as to brand such a line of treatment as unfortunate and unjustifiable.

The relief of pus tension is the first surgical step toward retarding absorption in all acute infections. The maintenance of low pressure in every pus pocket is a *sine*

qua non to continued freedom from absorption. The reduction of tension must be initial and the absence of pressure continuous. These purposes are accomplished by drainage. Irrigations are entirely omitted. For drainage purposes fenestrated or split rubber tubes are inserted to the stump of the appendix or the site of the ulcer, and into the vesicorectal or Douglas's pouch, and any other pus pockets that may exist.

The entire technique should be accomplished in a very few minutes, since time is vital. As soon as the patient returns to bed proctolysis is instituted and maintained until the serious symptoms of intoxication cease. Murphy states that he has given 30 pints of normal salt solution in twenty-four hours to a patient eleven years old, and that the retention of fluid in the colon depends entirely upon its method of administration. The fluid should be administered through a fountain syringe to which is attached a three-eighths-inch rubber hose fitted with a hard-rubber or glass vaginal douche tip with multiple openings. This tube should be flexed almost to right angles three inches from its tip. The tube is inserted into the rectum to the flexion angle, and is secured in place by adhesive strips binding it to the side of the thigh so that it cannot come out. The rubber tube is passed under the bedding to the head or foot of the bed, to which the fountain is attached. It should be suspended from 6 to 14 inches above the level of the buttocks, and raised or lowered to just overbalance hydrostatically the intra-abdominal pressure—*i.e.*, it must be just high enough to require from forty to sixty minutes for $1\frac{1}{2}$ pints to flow in, the usual quantity given every two hours. The flow must be controlled by gravity alone and never by a forceps or constriction on the tube, so that when the patient endeavors to void flatus or strain the fluid can rapidly flow back into the can, otherwise it will be discharged over the bed. It is this ease of flow to and from the bowel that insures against overdilatation and expulsion. The tube should not be removed from the rectum for two or three days. When the nurse complains that the solution is not being retained it is certain it is not being properly given. Murphy re-

gards, next to the conservative technique of the operative procedure, proctolysis as second in importance as a life-saver. If the patient has a tendency to vomit, is nauseated, or shows evidence of gastrectasis, lavage should be practiced and repeated often if the stomach refills with fluid.

Antistreptococcic serum treatment is decidedly indicated in streptococcic cases. Murphy has used the streptolytic serum in a large percentage of cases and believes in the beneficial effects. Twenty cubic centimeters is injected immediately after the operation, and the same quantity each succeeding twenty-four hours until the patient is out of danger. The dressings are changed in accordance with indications, and once every twenty-four hours the abdominal drainage tube should be rotated a trifle first to the left and then to the right, to prevent closure of the fenestræ by adherence of omentum or intestine. Suction, irrigation, and injections of pyrozone are unnecessary and dangerous.

As to the drug treatment, there is little confidence placed in this. Opium and its derivatives and coal-tar anodynes are never given either before or after operation. Persistent overdilatation of the stomach is treated by lavage, if of the bowel by high enemas of alum water—half an ounce of dried alum to the quart of water, given through a fountain syringe. Medicinally the best results were obtained by hypodermic injections of physostigmine salicylate, repeated every one or two hours, in doses of $1/60$ to $1/40$ of a grain. Next in efficiency was found atropine sulphate, $1/60$ grain, repeated every three hours, until constitutional effects appeared. For persistent ileus either adynamic or mechanical opening of the intestine is advised.

Murphy has been pursuing this course of treatment for five years and reports 51 cases—2 gastric perforations, 1 duodenal, 5 typhoid, and 42 appendiceal. Two cases died, one of double pneumonia the sixth day after operation; the second from a mechanical ileus and strangulation of the intestine around the omentum, which was adherent to an old hernial opening. Seven of the cases had to be reoperated on for circumscribed accumulations of pus in various parts of the

abdomen, and six had to be reoperated for mechanical ileus, making 26 per cent of cases requiring the second operation. There were no deaths from peritonitis in itself. These records, which are corroborated by those of nearly every surgeon who has been influenced by Murphy's teachings, are in themselves convincing without the added arguments adduced from the laboratory side of the subject.

THE CURE OF CANCER.

This topic, always of vivid interest, inasmuch as it ranks second to tuberculosis as a cause of mortality, and as a source of human suffering takes first rank, is ably discussed by Crile (*Medical Record*, June 6, 1908), who after showing that it is by no means confined to the humans, but attacks domestic animals, birds, fishes, reptiles, and even the lowly oyster, notes that it is slightly, if at all, communicable, has not yet been proven to be increasingly hereditary, and is rarely transplantable. Its biologic characteristic is the fact of endless division of its cells. The natural prognosis is always unfavorable. The diagnosis in the early and curable stage is usually impossible, excepting by excision and microscopic examination. The precancerous stage is a curable one, nor indeed during any portion of the cancer development can reliance be placed upon any measure other than total excision. The excision must go wide of the cancer mass, never be carried into cancerous infiltrates, and should include lymphatic vessels and glands in which the cancer is carried. Crile shows that by proper methods of anesthetization, with the wise use of transfusion, and by skilful, general, thorough removal, not only are the immediate results of most extensive cancer operations good, but that the prognosis is distinctly favorable, and especially when operation is undertaken in the early stage of the disease. He quotes authority to the effect that one woman in eight who reaches her thirty-fifth year dies of cancer, and that the post-mortem statistics of hospitals show that cancer is found in one out of twelve autopsies.

The most novel feature of his communica-

tion, and one which will appeal to both surgeon and physician, is that which deals with the diagnosis of cancer by means of the blood test and the possibility of utilizing for cure of cancer the immunity principle through transfusion of blood.

Crile finds that the blood serum of the cancer patient may hemolyze normal corpuscles, but normal blood serum usually does not hemolyze the red corpuscles of a cancer patient. In some patients—thus far only those with inoperable cancer—there was reverse hemolysis—i.e., the cancer corpuscles were hemolyzed by normal serum. In some cases there was no reaction.

Twenty per cent of the cancer cases did not show hemolysis, but all but one were inoperable or very advanced. There was but one negative result in the early cases. Crile notes that hemolysis occurred in 82 per cent of cancer cases and in a considerable percentage of tuberculous cases. The latter, however, could be differentiated by the autolytic reaction. He states that in cases of suspected cancer giving negative tests the chances have been 20 to 1 that the cases were either in the late stage or non-malignant. The cured cases showed no hemolysis.

In regard to immunizing by transfusion Crile states he has transfused human blood into six human subjects having sarcoma, their tumors having been removed previous to transfusion. Sixteen months have now elapsed since the first case was so treated. Although the cases were of the round-cell and spindle-cell types, presenting an exceedingly bad prognosis if excision alone were done, and although they are at this time apparently free from the disease and show no hemolysis, they will be available as arguments on which to form a final judgment only after three or more years. Should these patients be cured and become immune it is likely they may become available for curing others, so that eventually a group of immunes may become established.

Crile states very clearly that the whole matter of immunizing against sarcoma is experimental. Even though this be so his contribution on the subject is of immense value.

REPORTS ON THERAPEUTIC PROGRESS.

DELAYED CHLOROFORM POISONING.

The *Lancet* of February 29, 1908, publishes reports of seven cases of delayed chloroform poisoning which has been variously named by different observers. Bastienelli in 1890 recorded what were probably the first observed instances of this toxemia. The symptoms which he detailed were those now so familiar to us, and in the necropsy fatty changes were noted in the muscles both cardiac and skeletal, in the kidneys, and in the liver. The hepatic changes which we now regard as typical were duly recorded. It is true that these pathological changes had been obtained experimentally at an earlier date, but anything like a causal connection was not arrived at before the careful clinical work of Dr. Leonard G. Guthrie was published. Casper's often-quoted assertion that "chronic" poisoning from chloroform must be admitted and reckoned with appears to have referred to the ingestion of massive quantities of the anesthetic, although the word "chronic" may be accepted as being employed in the sense of "delayed" or "postponed." Nothnagel had demonstrated in 1866 that chloroform when introduced under the skin or into the stomach produced fatty changes in the viscera and that the toxemia killed animals. Similar results occurred, as Ungar showed, even when the anesthetic was inhaled, and the extent of the fatty change was further proved by Strassmann to bear some relation to the antecedent condition of the animal, being markedly increased after hemorrhage or other depressing circumstance.

Perhaps the most important research upon this subject is that which was undertaken three years ago by Offergeld. This observer was able to reproduce with startling uniformity both the clinical and the pathological features of delayed chloroform poisoning, but his success in this regard forces upon the thoughtful mind the questions: (1) Were his results not rather due

to excessive quantities of chloroform, a drug which has been recognized to possess a powerful toxic effect upon protoplasm? (2) Why do any patients who inhale chloroform ever recover from the toxemia, which apparently should be regarded, if we admit Offergeld's findings without reservation, as necessary rather than as occasional? The clinical work which has been done, although it has made the condition capable of easy recognition, has as yet been unable to apportion the share which various factors have in producing the fatal result. Dr. Guthrie's judicial summing up of our knowledge carries us sufficiently far to make it desirable that the designation "delayed chloroform poisoning" should be replaced by some phrase which does not commit us to a pathogenesis which is as yet not beyond question. Mr. E. D. Telford, who has recorded several cases with extreme care, urges the necessity for further evidence. He believes that the instances of this toxemia are less infrequent than is assumed and insists on the importance of records being kept of every case and of a careful comparison being instituted between them. Dr. Guthrie in England and Dr. Bevan and Dr. Favill in the United States have set excellent examples.

It seems clear from the evidence at present before us that many factors are at work. The causal influences of antiseptics such as carbolic acid, of starvation, of fatty diet such as cod-liver oil, of sepsis, and of fat embolus appear to be *nil*. The constant factors are the anesthetic and the operation, together with the antecedent condition of the patient. It is extremely difficult to understand how a drachm or two of chloroform given from a mask, which would represent a very insignificant amount actually entering the circulation, could affect directly or indirectly the musculature and viscera of the entire body; and it seems as unlikely that so slight an operation as cir-

cumcision should cause shock or should initiate any profound nervous catastrophe such as would destroy the trophic control of the system. Whatever the causation there appears to be a clear picture before us of the results of a toxemia. The liver within a few days of the operation is robbed of its power of metabolizing, its structure becomes fatty, and neither it nor the kidneys can any longer maintain elimination of by-products, with a result that the state called acidosis appears. The acetone smell of the breath and the presence of diacetic acid and of *b*-oxybutyric acid in the blood and urine may or may not occur and are probably symptomatic rather than causal. Most authorities insist upon the fact that the changes in the liver lobules, although superficially resembling those of acute yellow atrophy, are essentially distinct, that indeed the fatty necrosis of the cells seen in the condition which we are considering is not identical with any other pathological change. The weight of opinion is expressed by Dr. Guthrie when he says that it seems most probable that the anesthetic or whatever is the determining cause of the process acts concurrently with some antecedent morbid state; whether it is "inadequacy" of the liver or what else we do not know. Certainly it is difficult to accept any other theory.

As to prophylaxis and treatment, it must be admitted that we have no certain guides. We know that the anesthetic when given experimentally produces effects proportional to the quantity given and to the duration of the administration, and this would appear to indicate that the less of the anesthetic which enters the circulation the greater are the chances of the patient's recovery. And that recovery does take place should be remembered. Again, we have learned from experiment that chloroform acts most potently when oxygen is deficient and the hemoglobin of the cells is depreciated, facts which indicate the employment of oxygen or at least the greatest care to avoid asphyxial complications. Whether the condition is associated with the lymphatic state is at present uncertain, and space forbids

further discussion of the matter at present. Treatment, except upon general lines, has proved unsatisfactory, and probably prophylaxis is far more important.

A PERSONAL EXPERIENCE OF SPINAL ANESTHESIA.

An anonymous contributor publishes in the *Journal of the Royal Army Medical Corps* for April, 1908, his experience under spinal anesthesia. He states that he felt a sharp prick in the small of the back, a sharp blow as the needle was driven home through the tissues, and a faint dragging pain as it found its way into the spinal canal. That was all, and the entire process of anesthetizing, so dreaded by the patient, and so troublesome to the operator, was over. In two minutes a warm glow spread slowly up both limbs, quickly followed by a tingling sensation in the feet. In another half minute a heavy, leaden feeling spread up both legs, and only the very slightest movement of the toes could be performed. The feeling of numbness gradually increased, with loss of sensation, and in three and a half minutes there was complete anesthesia up to the umbilicus, and the writer was experiencing the curious condition that, with complete control of all his faculties, he was, for all practical purposes, dead from the waist downward.

During the whole operation, which was in the region of the right hip and the muscles of the thigh, not a single twinge of pain was felt until fifty minutes after the insertion of the needle, when cutaneous sensibility began to return, and the last few stitches were slightly painful. The spinal anesthesia was produced whilst lying on the left side, and during the operation he found that there was not complete loss of sensation in the left leg, and that there was slight power of movement in the left foot. Slowly sensation began to return to the limbs, with the same tingling in the feet. He felt no nausea or unpleasant symptoms of any kind, and half an hour after leaving the theater was enjoying a cup of hot coffee and a cigarette, feeling very comfortable,

and thoroughly convinced of the tremendous advantages of stovaine over chloroform.

But four hours later he was not so sure about it, for he developed the most appalling headache, which lasted without a break for thirty-six hours, in spite of all treatment. Never had he experienced such a splitting headache, and he hopes he never may again. To vary the monotony, he had attacks of agonizing cramps in both legs, which lasted for an hour or so and then gradually subsided, to be followed by another attack in a few hours. The cramps became less frequent, the headache wore away, and forty-eight hours after the injection he was his normal self once more.

His experience of stovaine may be exceptional, and as far as he has been able to gather, is so; but if the after-effects of spinal anesthesia are likely to be as painful and prolonged as they were in his case, then it has no advantages over chloroform. He states that nothing would induce him to undergo the tortures of that reactionary period again, unless the administration of chloroform was out of the question. He has now tried both, and his experience may be of some interest to readers of the GAZETTE.

ATOXYL AND ITS VALUE IN THE TREATMENT OF SYPHILIS.

WARD writes on this theme in the *Journal of the Royal Army Medical Corps* for April, 1908. He says that when the "atoxyl" treatment was first tried the question of what quantity of the drug should be injected was rather a difficult one to decide, since they were working with quite a new drug; and, further, in view of the accidents reported from the Continent by other investigators, the necessity for proceeding with great caution was recognized. He began by injecting 6 grains every alternate day until the patient had had between 50 and 60 grains—that was about nine injections—the exact quantity depending upon the severity of the case and its progress. It was generally found that all symptoms had disappeared after eight to ten injections. After the patient had received this number

of injections they were stopped, and he was kept under observation in order to see what time elapsed before there was a recurrence of symptoms. In the majority of the cases a period of eight to ten weeks elapsed before the patient returned with any active signs of the disease, which were, however, very slight and easily yielded to a second course of injections of 6 grains each. But two men have been four months, and three men three months, since the last injection without any sign of a recurrence of the disease so far. The former two men have only had 48 grains, and all have had very definite symptoms to start with, such as induration of the sore, maculopapular eruptions on the trunk and arms, alopecia, and general adenitis.

When thirteen cases had been treated with eight to nine injections of 6 grains each without a single case showing signs of intolerance or toxicity, it was decided to increase the first two or three injections to 9 grains and then continue with 6 grains. In this way 80 to 90 grains were given during a course, and as no unfavorable symptom was noticed after this increased dose, it was decided to give 9 grains right through the course of eight to ten injections. All the patients who have had this treatment have done remarkably well, and no symptoms of intolerance have been noted.

It is too early to say how many courses of injections are necessary to completely stamp out the disease, or if it will be possible to increase the dose without causing toxic symptoms. There still remains a considerable amount of work to be done in connection with the treatment, but the author feels satisfied that in this sodium-amino-phenyl-arsenate they have a very valuable agent in the treatment of syphilis. Its immediate action on the lesions of early syphilis would appear to be quite equal to, if not better than, that of mercury. It has many advantages over mercury, without any disadvantages. It is very easily injected, as it dissolves readily in hot distilled water. The injections are absolutely painless, there has not been one single complaint of pain

or tenderness after an injection, or the least suspicion of induration or thickening. Injection of the drug is never followed by salivation or spongy gums, which is such a frequent complication in the treatment with mercury; and lastly, it should be of especial value in India and tropical countries, where the patients, already debilitated by disease and climatic conditions, are unable to take mercury in any form, whereas the sodium-amino-phenyl-arsenate should have a tonic and alterative effect.

The injections are given intramuscularly in exactly the same way as mercurial injections. Care should be taken that the syringes used for injecting atoxyl be sterilized by heat, since acids (carbolic) decompose the drug. The manufacturers claim for this sodium-amino-phenyl-arsenate that it is not decomposed after boiling for five minutes.

THE TREATMENT OF BACILLARY DYSENTERY.

The *Journal of the Royal Institute of Public Health* for February, 1908, contains an article on this topic by BLACKHAM. He says that in approaching the important subject of the treatment of a serious illness it is best to divide the remarks under different headings, indicating the therapeutic lines on which the treatment is based. The indications which will assist us in the treatment of bacillary dysentery are three in number: (1) To relieve the pain and tenesmus and to avoid all irritation of the inflamed mucous membrane; (2) to promote intestinal antiseptics by removing foul accumulations and arresting putrefaction; and (3) to counteract any morbid agency in the blood and support the patient's strength by suitable diet. Let us consider these indications seriatim.

1. For the relief of pain and tenesmus the use of opium was unhesitatingly condemned by the older writers on acute dysentery; but it is now universally used and recommended by all authorities, and in the experience of the writer the best method of exhibiting the drug is to give a quarter or a third of a grain of morphine hypoder-

mically, repeating the dose every three hours if necessary. He has found this effective in relieving both tormina and tenesmus, and this appears to be the treatment to be adopted on expeditions or in camp, when suppositories and material for enemata, so strongly recommended by some authors, are rarely available. A recent writer in the *Lancet* emphasizes the utility of opium.

The second portion of this indication is to avoid irritation of the inflamed mucous membrane. To meet this indication rest is absolutely essential, and in all cases the patient should remain in bed and use a bedpan. The frequent stools and tenesmus soon produce coldness of the surface and of the extremities, so to maintain the individual's vitality he must be kept warm by means of plenty of blankets and the use of hot-water bottles. All foods which leave a residue prone to decomposition must be avoided, and the author objects even to milk in acute dysentery if the tongue is foul, and prefers to limit the diet to weak chicken-broth, clear soups, whey, and a little egg-albumen till the tongue cleans. Milk is considered by Scheube and other Continental authorities the best food in all cases, but he thinks that British physicians generally are now opposed to it. In all cases clear soups flavored with the juice of fresh vegetables can be given, as they leave no residue behind and are most grateful to the patient as a change from milk or whey. Ewart and Nash very strongly recommend this kind of broth in the treatment of typhoid fever, and we may take it that the acute variety of dysentery must be treated on much the same lines as enteric fever. Nash says: "Too rigid an application of the exclusive milk diet spells disaster in many cases. I can call to mind more than one case of typhoid fever which has been admitted to hospital desperately ill, not so much through disease *per se* as through loading of the intestinal tract with massive milk curds, producing most harmful toxins and mechanical irritation." Stimulants should not be exhibited as a matter of routine; they are rarely necessary, and

should only be given in small quantities when the prostration of the patient is very great. A teaspoonful of brandy in a table-spoonful of hot coffee is a good method of exhibiting alcohol.

2. The second indication for treatment is to attempt to produce intestinal antiseptis. This can, of course, be merely an attempt, as the bowel may be regarded as a forest crowded with flora and fauna of the most varied and septic character; but although it may be useless to try to render the intestinal mucosa aseptic, it may be possible to place it in a position which will discourage the growth of a delicate organism such as the bacillus of dysentery appears to be. There are three ways in which we may attempt to treat this indication, namely: (a) by the administration of saline aperients or calomel, which sweep all foul accumulations and organisms from the intestinal tract and inhibit the growth of microorganisms; (b) by the administration of specific sera; and (c) by washing out the bowel per anum by means of astringent and antiseptic fluids. In the tropics the best preliminary treatment for all cases of diarrhea is a dose of castor oil with or without 15 to 20 minims of liquor opii sedativus, and the author believes that slight cases of dysentery are often checked thereby and require no further treatment, except complete rest and bland, non-irritating diet for three weeks. Having administered castor oil the physician must elect whether he will resort to drug, serum, or lavage methods of treatment.

Treatment by Drugs.—The administration of salines has many adherents amongst officers of the Royal Army Medical Corps serving in India, and in most hospitals in that country mixtures containing a drachm to each dose of either magnesium or sodium sulphate constitute the stock "dysentery mixture." The first is Buchanan's original formula, and the latter his modification on discovering that sulphate of sodium gave, on the whole, better results than sulphate of magnesium. The mode of administration is to give a dose of one or other of these mixtures every hour until the motions become fecal, and then every three or four

hours for one or two days. If the stools become watery and show no tendency to take on a feculent character the saline treatment must be stopped, and serum therapy resorted to. Scheube and Kartulis are strong advocates of calomel in the treatment of dysentery, and in a very recent article Professor Plehn, of Berlin, recommends the use of this drug instead of either ipecacuanha or sulphates. He says that what he calls the "calomel cure" should be commenced immediately the effect of the initial dose of castor oil becomes obvious. It consists in administering half a grain of calomel regularly every hour until twelve doses have been taken during the day. The treatment is suspended during the night, and the calomel repeated in the same way during the second and third day. "These doses of 6 grains of calomel per day, administered in divided doses, do not in the least act as a purgative, but on the contrary they alleviate pain and act as an astringent, sometimes, in very fresh cases, as early as after twenty-four to twenty-eight hours. Perhaps this is explained by assuming that the calomel has a direct lethal effect on the organisms, and, in consequence, the formation of toxin is limited or stopped." On the third day the excretions have mostly subsided and the subjective discomforts have entirely disappeared. However, the dysentery is thereby not wholly cured, as the uninitiated may be disposed to assume to their cost. The ever-present ulcers or diphtheroid coagulation necroses of the mucous membrane of the intestine need far more time for their healing process and subsequent regeneration of the tissues. According to their experience in the treatment of recent cases, this takes at least three weeks. Dangerous complications, in cases of enteritis caused by amebæ, arise during the healing process by the spread of unexterminated parasites through the portal vein into the liver, forming necroses and abscesses. In diphtheroid dysentery they consist in a reabsorption of toxic products through the surface of wounds. In order to avoid these complications, bismuth should be administered after the cal-

omel cure, namely, bismuth subnitrate 6 grains every hour—i.e., one and a half drachms per day. This treatment should be continued for three or four weeks. "We have never observed even a suspicion of intoxication through bismuth" (International Medical Review). It would be interesting to know the opinion of English physicians on this so-called "calomel cure" of our German colleagues.

THE TREATMENT OF AMEBIC DYSENTERY.

BLACKHAM in the *Journal of the Royal Institute of Public Health* for February, 1908, takes up the treatment of amebic dysentery, a condition which is, he considers, the cause of most chronic intestinal fluxes met with in practice in the East. He says the indications requiring treatment are three in number: (1) to promote a restoration of the diseased mucous membrane; (2) to counteract any morbid tendency in the blood; (3) to support the patient's strength by proper diet.

In applying ourselves to the first indication for treatment, the drug on which we must pin our faith is, the author thinks, ipecacuanha. Scheube says this drug must be regarded as having a specific effect, "a fact which does not seem as yet to have been fully acknowledged, at least as far as German text-books are concerned." Manson thinks that "ipecac and simaruba really seem to have some sort of specific action on the disease or its cause, but in what way it is impossible to say." Yeo thinks that ipecacuanha may be microbicidal and arrest the growth of the organism producing the disease, while Fayrer points out that the mortality of dysentery in India, which was 11 per cent before its use, fell to 5 per cent after its introduction. Ipecacuanha prepared without the emetic principle was much vaunted at one time, but its use was abandoned by most Indian practitioners before the South African war, when it was extensively used and found most unsatisfactory. The author believes Day's remarkable experience of the inability of the drug

to cure dysentery was due to his using this preparation, and his failure to differentiate between the bacillary and amebic types of the disease. He reported sixty cases, in twenty-six of which he used ipecacuanha sine emetina and opium, with the result that nine died, and thirty-two in which he administered sulphate of magnesium with only one death. It is possible that the nine cases which died under ipecacuanha were bacillary dysentery, while the one which died under saline treatment was amebic.

Recent testimony which goes far to show the usefulness of the drug is given by Major Leonard Rogers, of the Indian Medical Service, in a paper read before the Royal Medico-Chirurgical Society and published in the June, 1907, issue of the *Practitioner*. He says: "It is just in those tropical climates where liver abscess and amebic dysentery occur that ipecacuanha is looked upon as a specific in many cases of dysentery, while I have been informed by several medical men with experience of dysentery in countries where amebic abscess of the liver is not seen, that the drug is useless in the dysenteries of bacterial origin with which they have to deal. Personally I look upon ipecacuanha as invaluable in the treatment of amebic dysentery—in fact, as a specific against that disease—and in Lower Bengal, where amebic abscess of the liver is common, I regard this drug as second only in importance to quinine itself. If this is so, it is easy to understand how large doses of ipecacuanha (no less than 20 to 40 grains once or twice a day some twenty minutes after a dose of opium) may rapidly abort an early presuppurative amebic hepatitis by curing the latent dysentery that produces it, although I find no recommendation of the drug in some of the standard works on tropical medicine, except when symptoms of dysentery are present."

From this opinion it would appear that ipecacuanha not only cures amebic dysentery, but prevents liver abscess. The author's routine method of exhibiting the drug is to put the patient in bed and on milk or whey diet, and administer ipecacuanha in gradually diminishing doses every night,

starting with 30 or 40 grains; then proceed to give a course of very small doses of castor oil, with or without opium, three times daily, regulating the dose according to the amount of action produced. If this treatment does good he proceeds to give a mixture of simaruba with aromatics and an intestinal antiseptic, such as salol, or salicylate of bismuth. These measures failing, he resorts to direct topical applications. Osler and Manson agree that these are of the utmost value in the treatment of dysentery, but on one important point the two authorities differ. The latter insists that topical remedies should never be applied when acute symptoms are present, whereas the former gives the technique for their use in the acute stage of the disease. Rectal injections of nitrate of silver were formerly considered to be the best means of local application in all forms of chronic dysentery, but solutions of quinine have now very largely replaced them in cases not clearly bacillary in origin. The quinine should be of the strength of 1 in 5000 at first, and gradually increased in strength till a one-per-cent solution is reached. It should be given, after a preliminary dose of castor oil, by gravitation, in the manner indicated under bacillary dysentery, and it very rarely fails to give satisfactory results.

The author has used it recently in some cases of very old standing, with the gratifying effect that patients who had not been passing solid feces for years have resumed their normal habits.

Indications (2) and (3) must be combated on much the same lines as those indicated above for the bacillary type of disease. If, as unfortunately occasionally happens when the case is being treated abroad, the patient fails to get well notwithstanding most careful dieting and therapeutic efforts, the sooner he is sent to Europe the better, and in such cases, after similar measures have been adopted in England, the advantages of a course of treatment at Carlsbad, or of the system of rectal douching practiced at Plombières, should be brought to the patient's notice.

THE TREATMENT OF ACUTE PNEUMONIA.

In the *Practitioner* for April, 1908, West writes on this always interesting topic. He says that stimulants are not required in an ordinary case in the healthy and young, but will probably be necessary from the first in the aged and weakly. In persons of alcoholic habits, or where nerve symptoms or marked asthenia develop, stimulants have often to be given freely. They may even be our sheet-anchor, for as pneumonia, though a very intense fever, is of short duration, if life can be preserved for a few days till the crisis comes recovery will take place. Alcohol in some form is the stimulant generally used. Ether may be given, but its action is more transient, and it is often distasteful.

Oxygen is very useful, for under its administration cyanosis lessens, the heart beats more regularly and slowly, the patient becomes less restless, and may fall asleep. If, however, it is to do good it must be employed early, and its administration not deferred until the patient is moribund. When given dry it is sometimes irritating. It should be allowed to bubble through water, or, what appears to be better still, equal parts of water and alcohol.

The stitch in the side, so commonly present at first, tends to disappear after twenty-four hours or so. If hot poultices do not soon give relief, other measures must be used. Subcutaneous injections of morphine or heroin locally have been used, but they are undesirable for general reasons, and are uncertain in their action. The best and most trustworthy remedy is the application of two or three leeches over the seat of pain. This rarely fails to take the pain away, which usually does not return. Poultices are objectionable on account of their weight, and for the purposes of counter-irritation a spongiopilin jacket is better, upon which spirits of camphor or even turpentine is freely sprinkled. The use of cold applications to the chest instead of hot has been highly recommended in the belief that they reduce temperature, check pain, and control the inflammation. Cloths wrung

out of ice-cold water, an ice-bag, or Leiter's tubes with cold water circulating through them have been employed. In the writer's own experience cold applications have not been so successful or so agreeable to the patient as the ordinary poultice or counter-irritation.

Cutaneous hyperesthesia is not common. When local it occurs, as a rule, over the inflamed parts, and may be easily removed permanently, or at any rate for the time, by brushing the part over with tincture of aconite. When general it may be relieved by tepid sponging, but as it depends upon a general cause, probably toxemic, it is more difficult to treat.

Cough is rarely severe enough to call for treatment. If it causes much distress or pain some sedative may be required, but the pain in the side is better relieved by leeches than by narcotics.

Hiccough is a very grave symptom. It is usually associated, in the opinion of the author, with diaphragmatic pleurisy. It causes distress, and is very obstinate to treatment. Even morphine injections often fail to relieve.

Delirium has several causes—high temperature, some serious complication like pericarditis, previous alcoholic habits, or asthenia. These must be sought out and dealt with accordingly. For most of them stimulants are required. If sedative medicines are necessary, bromide of ammonium, with or without chloral, will be found useful, combined, if thought fit, with hyoscyamine and cannabis indica.

Hyoscyamine, which is so useful in mania, is a risky remedy in pneumonia, and the writer has abandoned its use.

Veronal also, in his experience, is a sedative which is not free from serious objection.

Sleeplessness is due to many causes, chief among which are pain and high temperature, which may be treated in the usual way. In children there is no better sedative than a hot bath, and in the adult wet packing or a cold douche to the head may have the same effect.

If, in the adult, twenty-four hours are passed absolutely without sleep, something

must be done to give rest, or the patient will die of exhaustion. If ordinary remedies fail, and we cannot waste much time in trying them, we are driven to consider the question of morphine.

Narcotics of any kind have to be used with great discrimination in pneumonia, if they are not to do more harm than good. The great objection to them is that they diminish the sensibility of the respiratory tract, and thus check cough and expectoration. Yet where the patient cannot sleep, sleep must be given, and if ordinary remedies fail nothing seems left but morphine, and the greatest benefit is often obtained from it. The author guides himself in its use by the amount of secretion in the air-tubes. The cases in which it should not be used are those in which there are signs of congestion in the non-consolidated parts of the lung. Such cases are practically always fatal, and morphine simply accelerates the end. When the rest of the lungs is not congested—*i.e.*, shows no signs of bronchitis—morphine may be given without risk and with great benefit. If it is decided to use it, it is best given in the most effective and certain way—*i.e.*, by subcutaneous injection, and not by the mouth. When a patient is at last got to sleep by morphine, the sleep is very profound. It may be so deep that the suspicion may arise that the apparent coma is due to the morphine, but with the doses used coma is impossible, and the deep sleep is simply that of exhaustion.

THE IODINE TREATMENT OF PUERPERAL SEPSIS.

In the *Charlotte Medical Journal* for April, 1908, ROBINS highly commends this plan of treatment. He advises that the patient be brought to the edge of the bed and the limbs properly supported. The anterior lip of the cervix is seized with a pair of vulsellum forceps and the cervix brought down to the ostium vaginae. The cavity is then explored with a dull curette and embryotomy forceps. This should be done in every case without reference to our previous conception of the completeness of the uterine

evacuation. Almost invariably something will be brought out, but it does not follow by any means that the discovery of the retained fragments reduces the case to one of sapremia. The presence of this foreign matter acts as a nidus for bacteriological invasion, and while in one case it may be that the infection is mild, in another it may be that of the severest type.

It is not necessary to remove anything except what lies within the cavity of the uterus. When the infection extends to the mucous membrane or beyond it is impossible to remove with a curette all of the infected tissue, and the use of a sharp curette simply opens additional avenues for infection. After the exploration and removal is completed the uterus is dried with cotton on a pair of dressing forceps, and after drying it is freely swabbed out with a pledget saturated with Churchill's tincture of iodine. In the majority of cases it is not necessary to provide drainage, and under any circumstances gauze drainage is objectionable. If the uterine cavity does not drain freely a rubber tube should be inserted. After the first curettement no other is necessary, but each day afterward the uterus should be swabbed out with iodine in the same manner until the temperature reaches normal and remains so for several days. When this treatment is used promptly and the temperature at once drops to normal, no other application of iodine may be necessary, but when there is a delay in treatment great caution should be observed in discontinuing daily applications. The author has observed cases in which the patient appeared to be entirely recovered, but in which the discontinuance of the treatment resulted in a return of the malady. The explanation was doubtless that the organisms had had their growth inhibited by the use of the iodine, but that they had not been entirely destroyed.

The author believes that in iodine we have the ideal antiseptic for this condition for the following reasons: It is, in the first place, a most efficacious antiseptic and destroys bacteria with which it comes in contact. In this it does not differ from many others. It

has in addition, however, the property of penetrating, so that in the soft, boggy uterus found in infection the action is not confined to the exposed surface, but is continued into the muscular tissue of the uterus. In addition to this the iodine is absorbed, and as the absorption is continued along the same channels as the absorption of the toxins, the iodine not only sterilizes the endometrium and the walls of the uterus, but the lymphatic channels as well.

The author is led to offer these observations because he has so frequently been called upon in cases of puerperal infection which appeared of the gravest character and which excited great apprehension on the part of the attending physician, in which this line of treatment has resulted in a prompt and complete recovery. In cases that are delayed there may be a great many complications and conditions arising, where this treatment, of course, cannot reach the seat of disease and is consequently not indicated; but to deal with all of these complications and their appropriate treatment would be foreign to the purpose of this paper. It is simply to set forth that puerperal sepsis does exist at the present day, that it may exist in spite of the most painstaking care of the attending physician, and that it can be almost invariably cured if promptly recognized and properly treated.

AMERICAN MINERAL WATERS IN THE LIGHT OF RECENT ANALYSES.

After making a very considerable report on this topic in the *Journal of the American Medical Association* of March 14, 1908, CROOK presents the following conclusions:

1. A great majority of the advertised analyses of our mineral waters were made many years since when methods were not so exact as they are at the present day.

2. Some mineral springs are sensibly influenced by the wetness or dryness of the season, both in strength and in volume; the greater the volume of the water the weaker it is in mineral ingredients. Examinations of such springs at different stages would undoubtedly yield dissimilar results.

3. While many springs are of deep origin and show no apparent fluctuations in their rate of flow, we have no positive proof that even these have not become more or less modified in character during the long period since the old analyses were made. The subterranean aqueous current, which constitutes a spring when it reaches the surface, cannot be counted on continuously to come in contact with earth strata which yield a uniform product to its solvent power. Underground streams, as well as those on the surface, are liable to change their course, and while losing certain of their former contents may acquire new ones.

4. The fact must not be overlooked that the government analyses were made in each case from samples purchased in the open market. It is therefore possible that some of the waters examined by the bureau chemists were spurious or adulterated.

5. The chemical ingredients set forth in the tables of contents of mineral springs represent hypothetical combinations only. No chemist maintains that the salts he sets down in his analysis exist in exactly that form in the water. He ascertains by his tests the various acid and basic ions existing in the water, and, as nearly as possible, in what amounts. He then reasons that they unite to form the salts which go to make up his hypothetical table of contents, which is presented as the analysis. It is hardly conceivable that any two chemists separately examining a specimen of spring water taken from its source, even at the same moment, would reach exactly the same result in stating the theoretical combinations. How much greater discrepancy might reasonably be expected in the case of analyses separated by periods of thirty or forty years!

With all due allowance for the above considerations, however, it must be confessed that we are in a state of inexcusable ignorance regarding the chemical constitution of many of these agents. Mineral water therapeutics must remain in a backward and unsatisfactory state until this is remedied. All of our medicinal springs

should be submitted to analysis at least once in ten years until we are able to arrive at a correct estimate of their potency, and whether they are gaining or losing in strength. No enterprising mineral spring proprietor, animated by a desire to put forth a reliable product, can object to the expense, repeated at intervals so widely separated. The decennial revisions of our works on materia medica and pharmacy should present a brief account of the mineral waters conforming to ethical rules, so that the medical practitioner may be in possession of as authentic and authoritative a source of information regarding these as he has in case of other therapeutic agents.

HYPNOTICS.

The following specifications of HOMBURGER are quoted by the *Journal of the American Medical Association* of March 14, 1908, as to the characteristics of hypnotics:

Substances which are active as hypnotics are soluble in oils and in the fatty constituents of the nervous system, and they must be somewhat soluble in water and in the body fluids generally to permit of their absorption and conveyance to the nerve centers.

The hypnotic power of a substance corresponds to the partition coefficient of its solubility in oil and water, which means its solubility in oil divided by its solubility in water. The higher its partition coefficient the greater its hypnotic power.

In bodies belonging to the same class as alcohols, etc., the compound with the least branched carbon chain has the strongest hypnotic power, and the one with the most divided carbon chain has the weakest. The introduction of the halogen elements, chlorine or bromine, into the molecule increases hypnotic strength, while the introduction of hydroxyl groups weakens it. In all these cases the partition coefficient varies with the hypnotic power. In general, with some exceptions, the introduction of additional radicals of the higher alcohols, such as ethyl or propyl, increases the hypnotic

power, and this increase is accompanied by a rise in the partition coefficient; but this rise sometimes fails to occur, and then the expected increase in the hypnotic power is not observed. This is well illustrated by the effect of the introduction of ethyl groups into the sulphone derivative of methane. Sulphonal (now official as sulphonmethanum), containing two methyl groups and two ethylsulphone residues, has a comparatively low partition coefficient and weak hypnotic power; the introduction of ethyl in place of one methyl group forms trional (now official as sulphonethylmethanum), which has a higher partition coefficient and greater hypnotic power. The substitution of a second ethyl group for the last methyl group forms tetronal (diethylsulphondimethylmethanum), but in this case the partition coefficient as well as the hypnotic power becomes less, indicating a limit to the increase in hypnotic power by the introduction of the higher alkyl groups.

Similar illustrations may be given of the application of chemical principles to synthesis of new hypnotics, by which such remedies as hedonal, veronal, and bromural have been obtained.

Hypnotics may be divided, chemically, into three great groups, viz., the chlorinated alcohols and aldehydes, the sulphones, and the derivatives of urea and other amino compounds. Therapeutically, the last two groups appear to be closely allied.

THE USE OF RED WINE INJECTIONS IN INFANTILE DIARRHEA.

In the *Archives de Médecine des Enfants* for April, 1908, HOUSSAY records a number of cases which he has treated with success by the injection into the bowel of red wine in sufficient quantity to act as an enterocolysis. Under these circumstances the alcohol which is present in the wine is absorbed and acts as a stimulant and support to the system, and its tannic acid is an astringent. It is probable, too, that there may be present in the wine certain ethereal substances which are stimulant in their nature.

THE THERAPEUTICS OF CARDIO-VASCULAR DISEASE.

HENRY in an article in the *Monthly Cyclopedic and Medical Bulletin* for June, 1908, states that he is thoroughly in accord with von Noorden in his condemnation of an absolute milk diet. The large amount of fluid which it necessitates produces the very conditions which we are endeavoring to avoid or suppress, arterial hypertension and cardiac embarrassment. As lime salts are frequently found in atheromatous arteries, it has been advised to limit the supply of such substances as contain lime. From this standpoint milk should be forbidden. The fear of introducing lime into the system is, however, chimerical, for this substance, as pointed out by von Noorden, is not deposited in the arteries until they are extensively diseased. The analogy between the deposit of lime in the vascular structures and that of sodium urate in a gouty joint is complete, for in each case a certain degree of necrobiosis is believed to precede the deposit.

Diverse opinions are expressed by the most competent authorities concerning the effects of baths in cardiovascular disease. Cold baths elevate the arterial pressure so suddenly that, in many cases, they are undoubtedly dangerous. The same is true of hot-water baths (100° F. and upward) and of hot-air and vapor baths. The most alarming symptoms, according to the author, have been produced by the Turkish bath in a case of arteriosclerosis in which the heart, while free from valvular defect, was undoubtedly the seat of mural degeneration. The brusque action of the douche is also to be avoided. The safest and most beneficial is the warm bath (from 95° to 98° F.), either plain or medicated with sodium or calcium chloride. According to Dr. Phillip King Brown, of San Francisco, who has recently studied the effects of baths on blood-pressure, the full-strength, effervescent Nauheim bath invariably raises the arterial pressure, the hypertension lasting for about four hours, when the bath is taken during the day. If the bath is

administered at night (11 P.M.) the pressure on the following morning is higher than normal, and has presumably been elevated during the hours of sleep.

Massage is a measure that may be resorted to with distinct advantage, and the same is true of electricity in its various modes of application. In cases of intermittent claudication, Erb recommends galvanic foot-baths, each foot being immersed in warm salt water in which the poles of a galvanic battery are placed.

Medicinal treatment may be divided into the treatment of arteriosclerosis as a whole, including the arterial hypertension which so frequently accompanies it, and that of its local manifestations. For the former purpose the preparations of iodine are almost invariably selected. The traditional belief in the efficacy of these drugs is doubtless partly due to the association of the idea of syphilis with arteriosclerosis. The effects of syphilis, and vascular disease is often one of them, are not necessarily overcome by antisyphilitic treatment. The most conspicuous example of this fact is found in *tabes dorsalis*, which is not materially benefited either by mercurials or potassium iodide. Strümpell, in an admirable paper, has recently suggested an explanation of the failure of antisyphilitic treatment in cases of undoubted syphilitic origin, and especially in diseases of the spinal cord and the vascular system. He draws a therapeutic distinction between lesions due to the direct action of the spirochæta of Schaudinn, such as the gummatous processes, in which this organism may be readily detected, and those in which it is absent, such as *tabes dorsalis* and progressive paralysis. He attributes the latter, which he styles metasyphilitic processes, to the action of the toxin of syphilis, and compares them to the diphtheric paralysees which are undoubtedly toxic. The most important distinction, however, between the syphilitic and the metasyphilitic lesions is, as above intimated, the therapeutic, the one responding promptly to appropriate treatment, while the response of the other is feeble or negative.

Nevertheless, clinical experience speaks strongly in favor of the persevering employment of the preparations of iodine in cases of arteriosclerosis. We see the beneficial effects of such a treatment most distinctly in sclerosis of the cerebral vessels, whether it manifests itself by symptoms that may be accurately described as neurasthenic or by the graver triad—headache, vertigo, and loss of memory—upon which Cramer lays so much stress. It is also a well-known clinical fact that in sclerosis of the aortic valves and the neighboring portions of the aorta and myocardium, attended with pain, more or less continuous but hardly acute enough to be called angina, the effect of potassium iodide is often markedly palliative.

The iodide of potassium or sodium may be given in small doses (gr. v, *ter in die*), gradually increasing the dose to twenty, thirty, forty, or even sixty grains per diem. Benefit from such medication may not be obtained until after many months of its employment. The drug may be given in courses of six weeks, with intervals of a week or two interposed, for a year or longer, and in many cases with decided benefit.

When, as is so frequently the case in arteriosclerosis, the kidneys are extensively diseased, the iodine preparations must be used with great circumspection. They are excreted both by the kidneys and the glands of the digestive system.

THE TREATMENT OF THE MORE COMMON DISEASES OF THE SKIN.

The *Medical Record* of March 28, 1908, contains an article by Cocks on this subject. He reminds us that babies and adults affected with scabies or pediculosis should be bathed in warm water, to which borax and tincture of green soap have been added, and allowed to soak for half an hour. After drying, a two-per-cent unguentum hydrargyri ammoniati applied night and morning for a week is all that is necessary to effect a cure. Another measure for babies and children is to have

an ointment of balsam of Peru ʒij, precipitated sulphur ʒj, rose-water ointment ʒij, applied twice a day. For adults an ointment composed of naphthol, gr. lxxx; green soap, ʒvj; rose-water ointment, ʒij—2 drachms to be thoroughly rubbed into the skin twice a day, which will result in the death of the parasite in one week. The patient is then to take a second bath, put on clean underclothing, and report. Two teaspoonfuls of precipitated sulphur sprinkled between the bed sheets is a useful adjuvant.

The subjective symptoms of erythema annulare respond quite quickly to

℞ Sodii salicylatis, ʒv;
Misturæ rhei et sodæ, fʒij.

M. Sig.: A teaspoonful in a wine-glass of water every three hours.

A lotion of pulveris calaminæ precipitatæ, zinci oxidi, āā ʒij, phenol min. xxx, aquæ rosæ ʒiv, will relieve the objective symptoms.

The cure of tinea tonsurans demands long and persistent treatment. The patient should wear a muslin nightcap and be isolated. The hair is to be clipped, thirty or more hairs to be epilated daily, and the following ointment rubbed in with a stencil brush twice a day:

℞ Ung. hydrarg. ox. rub., ʒjss;
Ung. sulphuris, ʒij;
Ung. aquæ rosæ, ʒj.

In the opinion of the author, our alopecia areata patients should be treated systematically, and an application of pure phenol made every two or three weeks. As soon as the new growth of hair appears a daily massage with 30 grains of salicylic acid in one ounce of olive oil will complete the cure.

The physician should remove the crust or open the moist lesions of impetigo contagiosa himself and apply to the base of each lesion peroxide of hydrogen, to be followed by an ointment consisting of ung. hydrargyri ammoniati 5 per cent, or ichthyol same strength, in the ointment of zinc oxide. This is to be rubbed in twice a day until the patient is cured, the nurse

being instructed in the *modus operandi*. Bandaging the parts will aid greatly.

The pustular syphilide responds very kindly to *lotio nigra* externally and tablets of mercury and chalk internally. Of vital importance is the care of the baby's nutrition.

Pemphigus neonatorum non-syphiliticus requires the same careful watching as the luetic form. The calamine and zinc lotion applied every three or four hours is very acceptable.

As an intertrigo is generally due to acid urine, feces, or confined perspiration, by removing the cause, separating the contiguous parts, and the application of *magnesia carb.* ʒij, *zinci oxidi* ʒij, *aquæ rosæ* ʒiv, a cure is effected.

An application of one drachm of resorcin in three ounces of water, or of rose-water ointment, to the advancing border of *dermatitis seborrhœica* will check it.

Epilation is our sheet-anchor in *tinea barbæ*. This should be done by the physician, the parts being thoroughly cleansed with hydrogen dioxide, and the ointment recommended for *tinea tonsurans* applied. The patient is to apply the same night and morning. After the hairs of *sycosis non-parasitica* have been removed, an ointment of *ichthyol* 30 per cent in rose-water ointment has given satisfaction.

Eczema of the beard yields very slowly to treatment. The application depends on the stage of the disease. A chronic *eczema* requires a stimulating ointment, as oil of cade, one drachm to the ounce of zinc oxide ointment; or, if moist, *diachylon* ointment; if inflamed the more soothing lotion of calamine and zinc is to be preferred.

Leucoderma we can do very little for, except to stain it with walnut juice to correspond in color with the surrounding skin.

It has been the writer's experience that the more one treats a case of *chloasma*, the larger the lesion grows. If it is due to internal or constitutional troubles, these conditions of course should be treated.

Tinea versicolor responds quickly to the application of green soap allowed to re-

main in contact an hour or more, then washed off, and a solution of hyposulphite of sodium $\frac{3}{4}$ j, in rose-water $\frac{5}{8}$ iv, thoroughly applied daily. If any part is overlooked, a reappearance is sure to follow.

CHOREA OF AGGRAVATED TYPE WITH CERTAIN UNUSUAL PHENOMENA.

PHILIP in the *British Medical Journal* of February 15, 1908, tells us that slight cases of chorea require comparatively little in the way of treatment beyond release from disturbing influences, whether these be found at home or in school. More or less complete rest in bed, and satisfactory hygienic surroundings, along with a simple tonic, such as arsenic, prove readily efficacious. In the course of six to eight weeks the patient is commonly well. Even when the cure is longer delayed the final result is obtained along simple lines. It is different in graver cases. Here energetic measures require to be adopted, in order to anticipate and remedy the state of exhaustion with which the patient is threatened, and to prevent his injuring himself.

On this account it is desirable to have the patient on a soft mattress, preferably a water-bed; all hard structures in his neighborhood must be carefully padded; the head and corners of the bed should be cushioned; the patient's elbows and wrists, knees and ankles should be swathed in cotton wadding. It is not a bad plan to attach a pillow to the inner aspect of one of his legs. Scrupulous care must be taken in relation to feeding. The food should be of a simple, nutritious kind. The writer is much in favor, in such cases, of the systematic exhibition of egg-flip, say every two or three hours. Alcohol, perhaps best of all in the form of brandy in egg-flip, say 2 drachms, is of much service. Hydrotherapeutic measures may prove serviceable. Where the movements are not too violent a warm bath is of service. In other cases the wet pack may be used with benefit. In all cases great care should be taken in the matter of cleanliness, more particularly in relation

to scratches or sores of mucous membrane or skin which may be produced through the violence of movement.

Of drugs for this graver type of case, the most serviceable seems to be a combination of bromides and chloral. In one severe case bromides were at first used every three hours with insufficient effect. It was only when chloral was added that a sufficient restraining action on the movements was effected. The bromides were given in doses of 30 grains every three hours or thereabouts. Chloral was then added, first to the extent of 20 grains, which had little effect, and then twelve hours later in 30-grain dose. Fortunately this succeeded in giving the patient four hours' sleep. On the following night a similar dose afforded seven hours' sleep. During the deep sleep the muscular phenomena disappeared almost completely. On awaking from sleep the patient presented some of the old violence of movement, but he seemed extremely tired. After the second night's sleep he remained profoundly exhausted, and this has continued. The pulse remains rapid and the temperature elevated (100° F.). This is of grave omen, all the graver that now he has begun to show disinclination for food. When the writer saw him, a few minutes before delivering this lecture, it was hopeless to think of bringing him to the clinical theater. The outlook was most dubious. Fatal collapse seemed imminently threatened.

RESULTS OBTAINED FROM USE OF DIPHTHERIA ANTITOXIN REFINED AND CONCENTRATED BY GIBSON'S METHOD.

WODEHOUSE writes in the *New York Medical Journal* of June 27, 1908, on this topic and reaches the following conclusions:

1. In therapeutic use, often 10,000 to 15,000 units of antitoxin are indicated for one injection. If concentrated to a potency of 1500 units to 1 Cc., 10 Cc. only is necessary for the latter dose, whereas in using the old form of antitoxin, with a potency of 500 units to 1 Cc., the tissues

are necessarily distended three times as much by the injection of 30 Cc.

2. The much smaller sized syringe and needle necessary are very potent factors in dealing with neurasthenic, frightened patients, who always see every detail.

3. The systemic affections are markedly reduced.

4. In a hospital where both diphtheria and scarlet fever are treated, the early recognition and isolation of scarlet fever or measles, developing in the diphtheria ward, is most important. When refined and concentrated antitoxin has been used, there is no necessity of retaining patients with erythematous rashes under observation for several days, as we know these rashes rarely follow its use, whereas under the old methods, using the unrefined horse serum, with its accompanying rashes, the early diagnosis was always doubtful.

THE SERUM TREATMENT OF EPIDEMIC CEREBROSPINAL MENINGITIS.

In the *Boston Medical and Surgical Journal* of March 19, 1908, DUNN gives many details as to this subject. He reminds us that investigators have been working upon the production of an antiserum toward the meningococcus, and the recent work of Flexner, at the Rockefeller Institute of Medical Research, has brought such an antiserum into the domain of practical realization. It now remains to confirm the value of this antiserum in actual practice.

The Flexner serum is prepared from horses inoculated with the meningococcus in a similar way to diphtheria antitoxin, and, like diphtheria antitoxin, contains specific immune bodies. It differs from diphtheria antitoxin in that it does not, as in diphtheria, neutralize the poison formed by the specific organism, but hastens disintegration of the specific organism, and prepares it for phagocytosis. It is bactericidal rather than antitoxic in its nature, wherefore it should not be called antitoxin, but meningitis antiserum.

The antiserum was proved by Flexner's experiments to have protective power in laboratory animals, monkeys being used. During the past year it has been tested upon human beings in several series of cases of epidemic cerebrospinal meningitis. The report of these cases has just been published by Flexner and Jobling in the *Journal of Experimental Medicine* for January, 1908. The results reported are so favorable that they hold out the greatest possible hope for practical benefit, though the number of cases is still too few for the drawing of final conclusions.

The method of using the serum recommended by Flexner is to inject it directly into the spinal canal. This is done by means of lumbar puncture, and just as much fluid as will run freely is allowed to escape; then a syringe filled with the antiserum is connected with the needle through which the fluid has escaped, and the serum is injected through this same needle. The questions of the dose and the frequency of the injections are, of course, still to be determined. Flexner suggests 30 cubic centimeters as the maximum dose, to be repeated daily for three or four days, and that at least as much cerebrospinal fluid as this should be first withdrawn, in order to avoid the risk of an undue increase of cerebral pressure.

Since last November the author has used Flexner's antiserum in fifteen cases of epidemic cerebrospinal meningitis, in all but one of which the diagnosis was confirmed by the finding of the diplococcus intracellularis in the cerebrospinal fluid. Of these cases, eight have resulted in complete recovery, two have resulted in death, and five are still pending. The eight cases which recovered are all perfectly well, having been left with no sequelæ of any kind, an unusually favorable result in this disease. The two fatal cases were both chronic cases, in which the disease had run a considerable time before coming under his observation. Of the five cases which are still pending, four are now convalescent and will undoubtedly recover; the other is a chronic case, in which the

outcome is *dubious*. Every one of the eight cases to which the author had given the serum in the first week of the disease has resulted in complete recovery, and of the pending cases, two in which the antiserum was given early are convalescent.

The two fatal cases were in children who had had the disease for several weeks and were already in the chronic stage when first seen. Both were unconscious, with normal temperatures, although in both there were a few organisms to be found in the cerebrospinal fluid.

The other unfavorable case was an adult in which the disease had existed for three weeks. There was some fever and the organisms were still present in the fluid, which was obtained in unusually large quantity. Forty-five cubic centimeters of antiserum was given on January 23, 24, 28, and February 3. The temperature came down to normal after the first dose and has been normal since, but there has been no improvement in the general condition. No organisms were found in the fluid after the first puncture. The author believes the continuance of symptoms in this case was due to the organic lesions in the brain, possibly an internal hydrocephalus resulting from the infectious process, which itself has ceased, leaving extensive damage behind. The patient is still alive, but is daily growing weaker.

Two cases, which ended in complete recovery, showed no immediate effect from the giving of the serum. In both a temporary fall of temperature followed the giving of the first dose, but both ran a prolonged course of fever, with gradual but steady improvement of the symptoms. One of these was an early case, and was the only early case which did not show a marked immediate improvement after the giving of the antiserum. The doses given early in this case were exceptionally small, 5 to 15 cubic centimeters, as very little fluid could be obtained by lumbar puncture, and the failure of immediate improvement may be due to this fact.

Two cases, neither very early, showed no immediate effect after receiving the

antiserum, but recovery was rapid, both as to the reaching of a permanent normal temperature and the disappearance of symptoms.

Eight cases, in which the serum was given early in the disease, showed a very marked, even startling, improvement immediately following the giving of the serum. In four of these cases there was an immediate and permanent fall of temperature, exactly resembling the crisis of a pneumonia, which was accompanied by a complete and permanent return of the mental condition to normal, complete and permanent disappearance of headache, and followed by rapid disappearance of rigidity of the neck and all other signs. Two of these cases in twelve hours after the first dose returned from a condition of complete unconsciousness to one of absolutely normal mental condition. In the other four cases the temperature fell to the normal by a fairly rapid lysis, accompanied by rapid improvement in the mental condition and disappearance of symptoms and signs. In two of these there was a rapid change from a condition of active, almost violent, delirium to one of normal mentality.

It is difficult to convey a full impression of the remarkable behavior of these cases by mere statistics. Actual contact with them impressed upon the author the contrast between their course and the course of similar cases of cerebrospinal meningitis untreated by the Flexner antiserum.

This series of cases is too small to afford a statistical basis for drawing any definite conclusions as to the final value of the Flexner antiserum in cerebrospinal meningitis. Much remains to be proven, and it is possible that his series included cases of exceptional character. Dunn believes, however, that he is justified in urging a wide-spread trial of this treatment.

In the first place, Dunn thinks we can conclude that the use of the antiserum does no harm, and he understands from Dr. Flexner that he himself has used it in larger doses than any of his other investigators. In no case was there any sign

of bad effect, and in two cases he injected it into the spinal canal without the previous withdrawal of fluid without any sign of bad result from increased intradural pressure, but he would not recommend the use of this procedure without great caution.

While the percentage of recoveries in cerebrospinal meningitis is very variable, in the writer's experience of this disease recovery almost invariably occurs after a more or less prolonged period of illness, often running into actual chronicity. A very large proportion of cases which do not die at an early stage pass into a chronic stage, the final outcome of which is doubtful. He has never seen nor even heard of a case, proved by lumbar puncture to be true epidemic meningitis, which aborted, or terminated by sudden crisis at an early stage. The recovery by crisis and the rapid improvement followed by recovery immediately following the giving of the antiserum, in so large a proportion of this series of cases, is, Dunn believes, strong evidence of the favorable specific effect of this treatment.

The completeness of the recovery of the cases in this series is another very important feature. It is well known how frequently permanent sequelæ occur in those cases of epidemic cerebrospinal meningitis which survive. Permanent deafness, blindness, paralysis, mental impairment, and idiocy are common enough to make the prognosis dubious in all cases which survive the initial storm of the disease. In the thirteen cases in this series now alive, eight are now and have been for many weeks absolutely well, and three are fully convalescent without evidence of any unfavorable sequelæ. In one case now convalescent there is marked deafness, the other being the chronic case in which there is probably hydrocephalus. The writer believes this number of complete recoveries is significantly large.

The most important point suggested by the results of the use of the Flexner serum, in this series of cases of epidemic cerebrospinal meningitis, is the advantage to be gained by giving it early in the

course of the disease. Not only did all the cases in which it was given early recover, but all those cases in which its use was followed by a marked immediate improvement were cases in which it was given within the first few days of the disease; and in two of these earlier cases the disease was apparently completely aborted by one dose of the antiserum. The author believes that the importance of early diagnosis and treatment cannot be overestimated.

Dunn thinks the results of the Flexner antiserum in these cases are sufficiently good to afford a very strong basis of hope that this treatment will prove of great value in cerebrospinal meningitis, a value commensurate with that of antitoxin diphtheria. He believes, even though it requires further testing, that the hope of good results is so strong that the antiserum should be used in every case of this very dangerous and fatal disease and as early as possible. In every case of suspected meningitis, or even of possible meningitis, lumbar puncture should be made as soon as the disease is suspected, and the physician should be prepared to give the antiserum at once. If the fluid obtained by the lumbar puncture is notably cloudy, the antiserum should be injected at once through the same needle, without incurring the loss of time caused by waiting for the result of the bacteriological examination of the fluid. The great majority of all cases with distinctly cloudy fluid, especially in children, are caused by the meningococcus; and in those rare cases in which cloudy fluid is found in tubercular meningitis, or in occasional cases of pneumococcus meningitis, no harm will be done. If, after one dose, temperature falls to the normal and the symptoms show rapid and progressive improvement, no further dose of antiserum may be necessary, but the physician should be ready at any time to repeat the treatment, if the temperature begins to rise or if the symptoms show a tendency to recur. Relapses do occur and should be treated exactly as the original attack.

If the temperature does not come down to the normal, or if the symptoms do not show progressive improvement, the treatment by lumbar puncture and the injection of antiserum should be repeated daily for three days, making four doses in all. After this time further injections may be made, as indicated by increase at any time of fever or symptoms.

CHRONIC BRONCHITIS.

AULD writes on this topic in the *British Medical Journal* of February 15, 1908. He points out that the treatment of chronic bronchitis is of course many-sided, and the complications may be numerous, but for the present consideration may be confined to the medicinal treatment which the circumstances of its pathology suggest. Now the profession, one and all, has been accustomed to think of expectorants in connection with the cure of bronchitis. What is implied by an expectorant? It is, of course, supposed to be a substance which induces or assists expectoration. But when we come to reflect in what way this assistance is given we may find ourselves in difficulty. Take, for instance, senega. We are advised that when the secretion is profuse, and the expulsive power feeble from weakness of the bronchial muscles, this drug is to be given. How does it act? We should expect it either to stimulate these muscles directly or else to stimulate the respiratory center. But we have no knowledge that senega acts in either of these ways. Dr. George B. Wood says that its action is that of an alterative, and W. E. Dixon, who studies the actions of drugs from the laboratory standpoint, declares that it is not absorbed into the system at all. Squill, again, is recommended for the same purpose as senega—that is, to assist in the expulsion of the secretion after febrile symptoms have subsided. Now, what we really know about squill is that it is a powerful cardiac stimulant. Ringer asserted that it acted on the heart like digitalis, and experiments confirm this. Speaking of its action in

bronchitis, Wood says that it “excites the local capillary circulation and the epithelium.” Christison, on the other hand, said that squill should be given in acute bronchitis, as it never stimulated the circulation. Many other examples might be quoted showing our ignorance of the action of the alleged expectorants on the bronchial tubes, though probably few would assent to the opinion of Dixon that any action they possess is merely reflex, due to the excitement of the stomach.

In view of the morbid alteration in the epithelial and glandular tissues, which is such an essential feature of the disease, we turn to the search for an agent or agents having a specific action on these structures. A good many drugs act on the mucous tissues, but in the case of chronic bronchitis we may limit our consideration of them to two or three. The first is iodine, in the form of potassium iodide. Although recommended by Sir Charles Scudamore in 1847, its great efficacy in cases of chronic bronchitis, both as expectorant and alterative, has only in recent times been fully recognized. The next to be mentioned is the balsam of Peru. The volatile oils—benzyl benzoate and benzyl cinnamate—and organic acids contained in this powerful substance exert a direct, peculiar, and specific effect on the mucous cells of the bronchi. The last drug the author mentions in this connection is oil of turpentine. But after trying the various oleoresins, tar, ichthyol, sulphur, and many other drugs, he has found the balsam of Peru the most efficacious and the most generally applicable. It acts quickly, altering and diminishing the mucous expectoration. Patients will return in the course of a few days saying that the expectoration has changed from yellow to white, and the cure is often very rapid. Nor is its efficacy, as is generally supposed, chiefly confined to cases with excessive secretion. On the other hand, certain cases of more or less dry bronchitis will rapidly yield to this substance even after potassium iodide has failed. As regards the oil of turpentine it is extremely efficacious in

advanced cases—especially, though not necessarily, where there is abundant secretion; but it is not easy to lay down definite rules for the administration of either of these substances. When the expectoration is already free, he begins at once with the balsam in doses of 10 to 20 minims, given disguised in emulsion with *mistura ammoniaci* or *mistura amygdalæ*, oil of anise and syrup. Very shortly a decided improvement will, in most cases, have set in and no further treatment may be necessary. If, on the other hand, the expectoration is scanty and difficult to expel, we begin with potassium iodide (gr. v-vij), and having obtained a free expectoration, follow up with the balsam. The addition of ammonium chloride or carbonate and sodium bicarbonate assists the action of the iodide. The salts may be disguised by fluid extract of licorice. Under certain circumstances the iodide may be added to the balsam, but this is not often called for.

Now, it is to be remembered that these drugs act chiefly on the mucous tissues or on the vessels, and do not directly allay irritation. If, therefore, their remedial action be not in all cases soon apparent, it must not be concluded, as many are apt to do, that they have failed. They will not readily fail providing we bring about the suitable local conditions. There may, for instance, be an excessive degree of irritation in the nerves, the cough continues very bad, and the mucous membrane cannot obtain that degree of rest which is required in order that our curative remedies may act. It is needless to enlarge on the importance of rest as an essential to healing action, and the bronchi form no exception to the rule. First, then, get the membrane rested, and there are several ways of bringing this about. We may use soothing inhalations, such as Scudamore's compound inhalation of ipecacuanha, conium, and hydrocyanic acid. Morell Mackenzie recommended some very good inhalations, and mention may be made of carbolic acid when the membrane is dry, and oil of turpentine when there is mucous deposit on the trachea. The vapor of tar

and belladonna is often very efficacious. Medicated pastilles should not be omitted, for there appears to be a special connection between the area just where the respiratory tract joins the esophagus and the cough center. At any rate, it is often remarkable how anodyne preparations applied to this part will allay even a bronchial cough. But in many cases the sedative will require to be taken internally, and of these there are many from which to choose: the bromides, hyoscyamus, conium, etc., and of course opium and its preparations. The more recently introduced hydrochloride of acetomorphine is very efficacious and not attended with unpleasant by-effects.

There is also another and important source of irritation which may first require to be combated, and that is excessive action on the part of the bronchial muscles, due to causes which have already been mentioned. The class of sedatives employed for the cough usually relieve the asthmatic attacks, especially if the iodide be given as well. But in other cases there is sufficient expectoration, and our remedies act well enough so far as that is concerned, but the irritation is caused by the retention of secretion owing to weakness and disorganization of the bronchial muscles. In these cases strychnine, digitalis, and ferruginous preparations will give assistance. Strychnine stimulates the respiratory center and digitalis directly stimulates the bronchial muscles. On the other hand, if the secretion is excessive and becomes threatening, we should check it by opium and give a cathartic. The idea that opium is dangerous in such circumstances has been overrated. There is a mean to be found where its influence is decidedly beneficial.

In most ordinary cases of the disease the plan of treatment herein sketched out, coupled with the free use of rubefacient applications and massage over blocked areas, so as to induce the lung reflex, will generally be found satisfactory. The presence of emphysema does not thwart our attempts unless it be excessive, for emphy-

sema of itself does not usually induce bronchitis. This may be seen in the case of those suffering from the congenital form of the disease, who, though dyspneic, may be but little troubled with cough and expectoration. The condition of the circulation and the renal functions must be carefully supervised, and when the back of the disease has been broken, so to speak, tonics are useful. Griffith's mixture, which contains iron and myrrh, is a good one, but unsightly. The combination was really first recommended by Dr. Badham, who in 1808 discovered the true nature of bronchitis. He prescribed an electuary of ferrous carbonate one part, myrrh four parts, and syrup of ginger three parts; dose, a teaspoonful. Large doses of sarsaparilla with nitric acid are recommended by Graves in cachectic states.

The diet is of great importance. Some patients require the carbohydrates cut down very much, and others the proteids. Bronchitics are also very prone to indulgence in alcohol, but their instincts in this respect are erroneous, as it undoubtedly feeds the flames of the disease and is one of the chief causes of its resistance and recurrence.

FURTHER OBSERVATIONS ON THE VALUE OF LACTIC ACID AS A REMEDY FOR CERTAIN CONDI- TIONS OF THE NASAL PASSAGES.

MACCOY in the *Monthly Cyclopedia of Medicine* for February, 1908, says that since 1898 he has used lactic acid in the treatment of diseases of the nasal passages continuously and with benefit. In his paper he incorporates part of his former article as substantiated by subsequent experience.

In advocating the use of lactic acid in the nasal chambers for obstructive conditions dependent upon engorgement or hypertrophy, he calls attention to the fact that the procedure is simple, quickly performed, and free from danger or much pain. Lactic acid, being fluid, is more available than acids of crystalline form. A small thread or thin tuft of cotton is applied to the small, roughened probe, and

then saturated with the strong acid, and after complete cocainization of the parts is applied to that portion of the nasal chambers requiring it. Without previous cocainization the application of lactic acid is sharp, but the pain caused is of short duration. With careful, complete cocainization the application is painless.

To enumerate all the various conditions to which this acid is applicable is quite unnecessary, but the author mentions a few of the most important.

Its employment is indicated in conditions found in chronic rhinitis, chiefly hypertrophic, though often in certain atrophic conditions, and in purulent chronic rhinitis of childhood. In the catarrhal conditions in children not amenable to milder measures it often offers advantages over other remedies in its milder reaction, freedom from deep wounds of tissue, and rapid restoration of epithelial membrane. In adults, after the removal of polypi, applications of lactic acid to tissue from which they have been removed is much more advantageous than any other means in the writer's experience. Recurrent suppuration of the anterior ethmoidal cells, with accompanying headaches, etc., atrophic changes in the vault of the pharynx in adults—often difficult to cure—respond happily to the use of lactic acid. The nasopharyngeal vault is often the seat of catarrhal discharges, sometimes associated with lymphoid tissue in young adults. This may not be at all obstructive to nasal respiration or interfere with vocal resonance, but the secretion is annoying and excessive. Under these conditions lactic acid will be found effective; also in obstructions of the Eustachian tube, as an effect of nasal inflammation, the congestion and hyperplasia of the tube can, in some instances, be removed. Lymphoid tissue in young adults in the fossa of Rosenmüller can be mummified or absorbed by repeated applications of lactic acid. This is of value in cases not available for surgical procedure.

To make a summary of his personal clinical observation: The employment of

lactic acid offers advantages over other acids now used, in that it is less severe in action and reaction, but none the less efficient; that it is superior to other acids by reason of its power to change cell acids and quicken changes in the mucous membrane, effecting absorption of cell tissue in a remarkable manner; that it does not produce cellular irritation in contiguous tissue when locally applied, and is therefore of greater value than any other active chemical agent now employed; and that, while lactic acid has a cauterant action on mucous tissue, it also has, in addition, special selection for cell tissue, making its effects apparent by absorption of hyperplasia.

HOW TO TREAT A CARBUNCLE.

In the *Medical Times* for March, 1908, FARNSWORTH quotes an article in the same journal for February, 1908.

In the January number of the *Times* is a new method of treating carbuncles. "Text-books invariably teach us how to abort carbuncles by injections; how to treat them by strapping with adhesive plaster, or how to cut them; but they fail to mention that all these remedies give little if any immediate relief from pain, and consequently are somewhat unsatisfactory to the patient as well as the physician." Farnsworth states that he has for a long time been treating carbuncles almost painlessly, satisfactorily aborting them in every case. It is neither by puncture, nor incision, nor poultice. He has before presented his plan to the profession, but it is probably so simple that they have overlooked it.

When the carbuncle is diagnosed, or in a later stage, apply a plaster of gum opium; if that is not convenient, powdered opium mixed with a little mercurial ointment (unguentum hydrargyri). It relieves the pain and controls the inflammation and the increase in size. In two or three days a limited amount of suppuration will take place and the small core come out.

The plaster should be placed early, but if considerable enlargement and induration has taken place, it will be just as soothing

and effectual. The after-treatment should be the thorough washing out of the cavity with a stream of water or an antiseptic solution. Healing begins at once. The writer has tested it in many cases and is certain of the result. The same treatment aborts boils. The sharp pain, the tension, and formation of pus are prevented, and the whole is over in a few days. Recently the author had occasion to try the opium treatment on infected sores, presumably caused by the bites of some insect. The lumps soon pointed and a core of pus came out, leaving a little abscess that soon healed. Crude opium serves the purpose, but the cure is accelerated by mercurial ointment later on. Carbuncles are no longer formidable to him, he states, or troublesome to treat.

ALCOHOL IN THE TREATMENT OF PNEUMONIA.

In the *Clinical Journal* of February 19, 1908, SUTHERLAND in an article on this subject asks and answers the following question: What is the proper time for giving alcohol?

At the beginning of an ordinary attack of pneumonia in a previously healthy or moderately healthy subject there is no occasion to give alcohol. Some commence the routine treatment of pneumonia with three or four ounces of brandy a day, and assert that cardiac debility must be averted by early treatment with alcohol. A special characteristic of alcohol is that it acts quickly, so that one has not to wait a few days for its effects to be perceptible, as in the case of digitalis. In the early days of a pneumonic attack alcohol should be withheld, and the patient's strength should be sustained by suitable food. After the fourth day, or when the signs of the pre-critical stage present themselves, alcohol may with advantage be given and continued through the exhausting period of the crisis, until recuperation has set in. The period during which alcohol may be beneficially given will thus be limited in ordinary cases to from three to six days.

Its action is strictly comparable to that of the other stimulants which may be used at the same time. After the crisis has passed the amount of alcohol may, as a rule, be rapidly diminished.

The first indication for the use of alcohol is given by the pulse. When the pulse becomes small or irregular or compressible and runs up to 110 or more per minute, alcohol is called for. The more suddenly this change takes place the more urgent is the call for alcohol, as the whole system is injuriously affected by a sudden impairment of the circulation. Confirmatory evidence will be found on examining the heart, when the first sound at the apex may be found to be weakened or blurred, and some dilatation of the left ventricle is present. Unless some evidence of cardiac weakness is recognized it is not advisable to give alcohol. Other associated disturbances of the system may indicate a call for stimulation—for instance, sleeplessness. This can often be relieved by a full dose of alcohol. Again, the cardiac weakness may induce a disturbed state of the secretions, as shown by a dry mouth and tongue. Here also alcohol may afford relief. There may be low muttering delirium, with restlessness, owing to the weakened circulation through the brain, a condition which is often benefited by alcohol.

Having decided to use alcohol for one or other of the above indications, one must give it a fair trial and watch the result closely. The stimulant is not to be continued on any general principles, but on the indication which the progress of the patient affords as to whether it is acting beneficially or not. If the pulse and heart improve, if the secretions become reestablished, and if the delirium or restlessness or sleeplessness is removed, then the alcohol is probably doing good, and is to be continued as required. If, on the other hand, one fails to perceive any improvement under the use of alcohol in sufficient amount, it is better to discontinue it and trust to other forms of stimulation. It should be kept in mind that many cases

of pneumonia can be successfully treated without alcohol at all, and that the indications for its use should be as clear as in the case of any other powerful drug.

There are certain contraindications which must be referred to. In the presence of a full and bounding pulse it is folly to give alcohol as a cardiac stimulant, or for any symptom such as restlessness, or sleeplessness, or delirium, or loss of appetite. If there is reason to suppose that pneumococcal myocarditis, endocarditis, or pericarditis is the cause of the cardiac weakness, alcohol will not be called for in large doses, and it is questionable whether under these conditions stimulation by alcohol will benefit the heart. The author's own experience has been that in acute inflammation of the heart the less alcohol one gives the better. If there is considerable blockage of the pulmonary circulation and embarrassment of the right side of the heart, these conditions should be relieved by other measures—cupping, leeching, etc.—before alcohol is used. The place of alcohol is to strengthen the action of the left ventricle after the state of the pulmonary circulation has been relieved. If there is much pulmonary edema or bronchial catarrh the free use of alcohol will rather tend to aggravate the condition, unless it is traceable to weak action of the left ventricle. If the patient is prostrated by profound toxemia, any attempt to revive him by large doses of alcohol will probably prove useless. His blood and tissues, already saturated with the poison of pneumonia, will neither be purified by means of alcohol nor rendered more capable of throwing off the toxins. As already stated, it is the collapse produced by failure of the cardiac center, and not that caused by general toxic infection, which will be benefited by alcohol. If the effect of alcohol is to excite and disturb the patient, to increase the distress, or to fail in producing an improvement in the cardiac embarrassment, it is advisable to reduce the amount or to discontinue it altogether.

The form in which the alcohol is supplied is important. Some have advised the

use of the stronger wines, port and sherry, because of the special ethers they contain, and of the added nutritive effect as compared with a plain spirit such as brandy. The ethers can hardly be determined beforehand by the doctor, and the chief point to be considered is the stimulating effect of alcohol. In the case of wines the strength in alcohol varies so much that one cannot regulate accurately the amount of alcohol which is to be given. A sound brandy or whisky is to be preferred as allowing of exact alcoholic dosage, and as supplying the stimulant in a form which is suited to most stomachs. If the patient or his doctor has a preference for rum or gin, equally good results may be obtained by either of these. On the grounds of palatability and quickness of effect champagne has also distinct claims, and it may sometimes act better than brandy in disturbed states of the stomach. After the crisis has passed and the stage of convalescence has been entered on, port or sherry or Burgundy may be employed in place of the spirit.

The question of dosage is one to be determined by the special requirements of the case. Speaking generally, one may say that a mild amount of stimulation will be secured by three ounces of brandy or whisky in the day, a moderate amount by six ounces, and a full amount by nine ounces. If it be said that these would be large amounts for a person in perfect health, it may be replied that the conditions in pneumonia are quite different. It is well known that many patients suffering from pneumonia can take large quantities of alcohol without the production of those symptoms which would certainly follow from the same amounts taken in a condition of good health. The object of the stimulation is to raise the force of the circulation as nearly as possible to that existing in health, and the dosage is to be regulated on this principle. Again, it may be said that the effect of large doses of alcohol on the tissues generally has been found to be injurious. To this it may be replied that such an effect depends on the

length of time during which the absorption of alcohol has been going on. The question of alcohol in pneumonia differs from that in most other affections in that it is a self-limited disease, and in that the period of stimulation may be put down as from three to six days. It is a case of treatment during a critical period, and we are justified in pushing our remedies in a way which would not be possible or advisable in a case of prolonged illness. From this point of view the above-mentioned amounts are not excessive, and if the stimulating effect is beneficial no permanent harm can be done to the system by the alcohol. These amounts will not, in the vast majority of cases, require to be exceeded. At the same time, if the physician is convinced that the alcohol is benefiting the patient, and that more is called for, he should have the courage of his convictions and increase the quantity.

It is advisable to give the brandy or whisky in doses of from two to four drachms, at regular intervals, and diluted with at least twice the amount of water. The aim is to produce a steady and continuous stimulative effect. Larger doses tend to upset the digestion and to produce a temporary overstimulation, followed by a reaction. Sometimes, however, a condition such as sleeplessness or delirium may be best treated by one full dose of from one to two ounces.

THE CHOICE OF A VASODILATOR AND THE INDICATIONS FOR VASODILATATION.

In the *Journal of the American Medical Association* of February 29, 1908, Cook in reviewing briefly the indications for the use of vasodilators, groups them under two main headings according to whether they are associated with (1) low and normal tension, or (2) high tension. First, cases with low and normal tension in which vasodilators are indicated: (a) Hemorrhage uncontrollable by ligature, compression, or local application. Under this would come ruptured extra-uterine, postoperative, postpartum, and traumatic

hemorrhage where surgical methods of ligature, suture, and packing may either not be applicable, or may not have controlled the flow entirely; hemorrhage from bowels in typhoid; hemorrhage from stomach, as in ulcer or cirrhosis; aneurism; hemorrhage in phthisis. Here the hemorrhage is the indication for the vasodilator and not the blood-pressure reading.

The blood-pressure may be reduced as low as 70 or 75 mm. Hg without danger to the patient. With a pressure as low as 75 mm. Hg, however, the author would not advise further reduction, as a blood-pressure much below this point seems to cause respiratory distress through lack of circulation in the respiration center. However, in severe hemorrhages, as is well known, after the blood-pressure has fallen below a point at which peripheral pulsation can be felt, the hemorrhage may stop before a fatal amount is lost, and such patients have rallied and recovered after they had been pulseless.

In operative procedures where control of bleeding is difficult, a lowered tension from nitrite will be found of great assistance. For instance, in a Gasserian operation on a man with arteriosclerosis and high tension, the hemorrhage obscured the field and was alarming, but was easily controlled after reduction of the tension. Again, in a complete hysterectomy operation as advised by Sampson for carcinoma, the bleeding, encountered deep in the pelvis, was uncontrollable until the tension was lowered nearly 50 per cent.

In the treatment of aneurism the formation of a clot is favored by a low tension, and where the sac is wired an induced low tension tends to lessen the danger from embolus, as well as to hasten the formation of a clot. The author would further advise the use of vasodilators in cases of venous thrombi, as the lowered tension would also here lessen liability to embolus.

Conditions accompanied by a high tension pulse are rapidly coming into greater prominence, and are more frequently brought to the notice of the practitioner.

This increased prominence is, in the opinion of the author, due to both an absolute increase in the frequency of the condition, as well as greater frequency of recognition due to improved methods of observation. The more general use of the sphygmomanometer has produced a more frequent recognition of the high tension pulse, but *pari passu* with the increasing strain of modern professional and business life, there is a simultaneous increase in physical strain, and this is particularly shown in the cardiovascular system by high tension pulse. As an example of a not infrequent condition the author cites the case of one of our great financiers, who on the eve of a desperate attempt to corner the market applied for \$1,000,000 insurance to cover some loans. At the medical examination a high arterial tension and accentuated second sound were the cause of a rejection. This man wisely abandoned immediately his financial operations, and went to Europe for a complete rest for six months, and was offered on his return to America all the insurance he wished. The vast majority of cases never receive the warning until serious organic change produces symptoms, and then rest and proper mode of life cannot always effect a return to normal, and recourse must be had to medicinal means of averting a dangerously high tension, with an apoplexy or acute dilatation as a termination. It is here that a vasodilator must be employed.

The three great cardiovascular diseases—apoplexy, cardiac hypertrophy and dilatation, and chronic interstitial nephritis—which play so large a part in general mortality are on the increase, and they are all accompanied by high arterial tension, and this high tension in a majority of the cases antedates the disease, and undoubtedly is an etiologic factor; so that high arterial tension when found without discoverable organic disease should be treated as a serious condition, and should also be recognized and corrected when it exists in connection with organic disease of heart, blood-vessels, or kidneys.

In heart and kidney cases the mere reduction of an abnormally high tension will often produce the most striking and satisfactory results—that is, if the tension can be lowered, the dyspnea, sleeplessness, anxiety, and cardiac pains are often greatly relieved or removed. The headache of kidney disease, often one of the most distressing symptoms, is alleviated, and in some cases the albumin markedly reduced. There can be no doubt that a reduction of high tension in chronic heart or kidney cases is attended with greater relief and general improvement than follows any other single measure.

A word of warning, however, is timely here. This reduction, especially where there are severe renal changes, should not be accomplished too rapidly, nor be carried too far. It must be remembered that probably in certain sclerotic kidney cases the high pulse tension is a physiologic compensation on the part of the arterial system to offset the inability of the kidney to function except under pressure, and where the compensatory action is inhibited by arterial dilatation the kidney is unable under lower tension to function, and the water may fill pleural or pericardial sacs or bronchial tubes, and the retained waste products may induce coma; so that when there is severe kidney involvement the reduction should be slow and carefully watched, and accompanied by very free evacuation of the bowels. One other word of warning: A lowered tension often brings with it a feeling of lassitude and weakness, which possibility should be explained to the patient, so that he may not misunderstand it and think that he is worse because he does not feel as strong as when living with a dangerously high tension.

There is no indication, however, for vasodilatation merely because Bright's disease has been diagnosed from urinary findings, for this disease may exist without any increase in arterial tension, in spite of the extreme position of certain authors claiming hypertension as the causal factor in all cases of Bright's disease. The indi-

cations for vasodilatation in Bright's disease depend on the actual demonstration of high arterial tension by the sphygmomanometer, and the amount and frequency of the dose depend on the individual effect in each case.

No case of cardiac, arterial, or renal disease should be treated without the use of the sphygmomanometer, as to attempt to regulate arterial tension without any knowledge of its degree or its action under treatment is to work in the dark. One-half grain of sodium nitrate is a safe initial dose in an untried case, and a three-hour interval between doses. The adjustment of dose and interval must be made in each case by use of the sphygmomanometer.

Cook concludes that:

1. Sodium nitrite is the best vasodilator; it has the most enduring effects; is most stable and dependable; gives rise to fewest unpleasant symptoms.

2. Vasodilatation may be indicated with low or normal tension—*i.e.*, all uncontrollable hemorrhage, either: During operative manipulation; typhoid ulceration; gastric ulcer; pulmonary phthisis; other internal hemorrhage uncontrollable by surgical methods; aneurism; thrombus, etc.

3. High tension is abnormal, and is either the accompaniment of organic disease or else presages its onset; in either case it demands treatment: first, by general hygienic measures; secondly, when necessary, by venesection or vasodilatation with drugs—preferably sodium nitrite.

SCOPOLAMINE AS AN ANALGESIC.

The London *Lancet* of May 9, 1908, deals with this subject in a practical manner.

Scopolamine, either alone or combined with morphine, for some years has been adopted for anesthetic purposes in several of the continental clinics. Some surgeons have used the method as a means of lessening the quantity of the general anesthetic which they give to the patient at the time when the actual operation is in progress. Many have tried scopolamine-morphine an-

esthesia for surgical work, but have found it uncertain and at times insufficient when severe operations had to be undertaken. In obstetric practice, however, analgesia rather than anesthesia is commonly aimed at, and Gauss has published a number of cases in which the scopolamine-morphine combination has been adopted by him with marked success. Dr. W. Ayres, in a paper read before the Stourbridge District Medical Society, describes the method and the condition which Gauss has designated "dämmer Schlaf" (twilight sleep), and which is characterized by insensibility to painful impressions and complete loss of memory of all that has occurred while the state has lasted. He points out that there have been a number of fatalities under scopolamine and morphine, and these he has investigated, coming to the conclusion that they have arisen through the use of untrustworthy drugs.

Commercial scopolamine frequently contains impurities, such as atropine, a body the therapeutic action of which is not the same as scopolamine. It is also important to remember that scopolamine is obtained from various plants, and although it has not been actually proved to be so, it is possible that the samples vary in action according to the source from which they are derived. If this be so it is probably due to the presence of varying quantities of other alkaloids, the commercial scopolamine being in fact a mixture of alkaloids giving varying results. Although therapeutically quite distinct the alkaloidal bodies scopolamine, hyoscyne, cocaine, and atropine are chemical isomers possessing the empirical formula $C_{17}H_{23}NO_3$. Kobert asserted that scopolamine and hyoscyne exert practically the same physiological action, but Dr. Ayres points out that the scopolamine derived from scopolia is a mixture of hyoscyne and atropine, and is obtained in greater quantity from this source than is hyoscyne from hyoscyamus. Hence the greater cheapness of the scopolia derivative. Although hyoscyne and scopolamine are chemically identical, it does not follow even when they are pure that they

will give similar physiological effects, and when impure their results therapeutically may be quite discordant.

Dr. Ayres insists upon various points in Gauss's technique as essential if success is to be obtained and the woman in labor is to fall into the semiunconscious state, which besides affording analgesia insures no memory of pain and complete freedom from the hysterical state which at times is liable to be evinced in parturition. Two separate sterile solutions are used—a 0.03-per-cent aqueous solution of crystalline scopolamine hydrobromide and a one-per-cent aqueous solution of morphine. The first injection is given when the pains are becoming severe and frequent, and should consist of from 1 to 1.5 cubic centimeters of scopolamine solution ($=0.30$ to 0.45 milligramme), with 1 cubic centimeter of morphine ($=0.01$ milligramme). In half an hour the patient is shown some object—e.g., a pair of scissors; and again, after another half an hour she is questioned as to whether she remembers the scissors. If she does not it is assumed that she was in the state of "dämmer Schlaf" when shown the object. No further injection is needed until future testing made in sense impressions reveals that the "twilight sleep" is passing off. Before each manipulation the patient is tested, and fresh injections are given as the indications appear to warrant them. The subsequent injections consist of 0.5 cubic centimeter or 1 cubic centimeter of the scopolamine solution according as the 0.5 cubic centimeter does or does not produce the "dämmer Schlaf" persisting for two hours. Gauss does not repeat the morphine, since it interferes with the expulsive labor pains. As a general rule, four injections made at the interval of an hour will suffice, although a two or even four hours' interval will prove sufficient to maintain the "dämmer Schlaf" until the birth of the child. The total amount of the drug used may be accepted as upon an average 0.75 milligramme, although as little as 0.3 milligramme and as much as 1.2 milligrammes may be required. Great stress is laid upon avoiding

all noises (Gauss stops the patient's ears to prevent the infant's cries reaching her), upon the use of fresh solutions, and upon obtaining the "dämmerschlaf" state by small doses and slowly.

Dr. Ayres, quoting Gauss, asserts that the usual causes of failure are: (1) Forcing the effect by too large and oft-repeated doses, which give rise to weak pains, rapid and irregular pulse, hallucinations, excitement, failure of the expulsive power of the abdominal muscles, and asphyxiation of the fetus; (2) too little time before the birth for preliminary injections; (3) beginning too early in the labor—the pains should return every five or six minutes and last for thirty seconds before the first injection is made; and (4) being induced by the patient's cries to repeat the injections instead of being guided entirely by the memory test.

It has been asserted that this method delays labor, but Gauss's experience does not appear to bear out this contention. Dr. Ayres seems to be satisfied that provided morphine is given in a sufficiently minute dose neither the uterine fibers nor the abdominal muscles become atonic. The effect upon the mother is stated to be, upon the whole, satisfactory, although the action of scopolamine upon the heart is one with which the accoucheur may have to reckon. To the child, however, more serious results occasionally follow unless the most heedful watch is kept upon the infant throughout the labor and for some days afterward, since the "dämmerschlaf" of the mother finds its counterpart in a peculiar intoxication in the child. The breathing is extremely slow, cyanosis may appear, and the infant's heart's action is correspondingly hampered. However, as Gauss's figures show, if the child is properly watched and measures are taken to insure due lung expansion, the mortality is not unduly great. It is unwise, we are told, to adopt Gauss's method in large maternity hospitals or private practice unless there is ample help at hand to insure attention being given both to the mother and to the infant.

CURETTAGE IN PUERPERAL SEPSIS.

RUTH (*American Journal of Obstetrics and Diseases of Women and Children*, February, 1908) expresses his belief that spontaneous unattended abortions and labors at term are almost never fatal from sepsis. He holds that manual and instrumental manipulations are responsible for the introduction of germs more virulent than the saprophytes. He urges that no instrumentation in any variety of puerperal sepsis should be considered which denudes the uterine mucosa and opens up tissues not in any sense protected from septic infection, the utmost gentleness being used to avoid any possibility of puncturing the softened or disintegrated uterine wall. He also argues against the use of antipyretics, preferring sponging and cold packs for the temperature when dangerously high, whilst cold water bottles are regarded as best of all. The use of antistreptococcic serum, which acts like magic in some cases, proves worthless in others, but is always indicated since it can do no harm.

Streptococcic and staphylococcic puerperal infections have, on the manifestation of symptoms, passed beyond all possible reach of removal by any form of curettage. Whilst this treatment can do no good, it may do much harm by disseminating infection and causing uterine perforation.

DEATHS FROM GASTRIC AND DUODENAL ULCER AFTER OPERATIONS FOR OTHER CONDITIONS.

THOMSON (*Edinburgh Medical Journal*, February, 1908) notes that this has happened in his cases and in those of other surgeons operated upon in the hospital to which he is attached—in one case for sarcoma of the upper jaw, and in the remaining two for enucleation of an enlarged prostate, in which the lighting up of an unsuspected ulcer of the stomach led in the course of an otherwise satisfactory convalescence to an unexpected and rapidly fatal termination. In only one of the cases were the symptoms suggestive of a gastric or duodenal ulcer brought out, and in only

one of the remaining two was it possible to get symptoms suggestive of such a history subsequent to the perforation. Even if the diagnosis of preëxisting ulcer had been arrived at the inference would have been made that the ulcer had either undergone cure or passed into a condition of latency at the time operation was performed.

The author considers as possible favoring factors to the rapid extension of the ulcer the retching and vomiting incident to the ether and after-treatment.

VALUE OF THE LEUCOCYTE EXAMINATION IN SUPPURATIVE CONDITIONS ARISING FROM MIDDLE-EAR INFECTION.

DARLING (*Edinburgh Medical Journal*, February, 1908) as the result of a very large clinical experience reaches the following conclusions:

The number of leucocytes per cubic millimeter is an indication of the amount of body reaction, while the polymorphonuclear percentage indicates the degree of infection. A leucocyte examination, therefore, always gives information of greater or less value.

Where clinical indications are definite, leucocyte examination may corroborate, but must not be allowed to override, these indications.

Repeated examination of the blood is of more value than a single examination, as a progressive rise or a progressive fall in the leucocyte count gives a definite indication of the progress of the condition.

In uncomplicated cases of acute middle-ear suppuration, the total leucocyte count and the polymorphonuclear percentage were higher than normal in 62 per cent of the cases. In cases of acute middle-ear suppuration with mastoid complication the total leucocyte count was above normal in 66 per cent, and the polymorphonuclear cells in 77 per cent of the cases. Little information of diagnostic value was obtained, because in a single examination of the blood the leucocyte count was in some instances higher in the uncomplicated cases than in those with mastoid complication.

In uncomplicated cases of chronic middle-

ear suppuration, the total leucocyte count in 33 per cent, and the polymorphonuclear percentage in 25 per cent of the cases, were above normal. In cases of mastoid complication with an acute exacerbation, the total leucocyte count was above normal in every instance, while the polymorphonuclear percentage was above normal in 66 per cent of the cases. In cases of mastoid complication without acute symptoms, the total leucocyte count in 44 per cent, and the polymorphonuclear percentage in 37 per cent, were above normal.

In cases of acute and chronic middle-ear suppuration with and without mastoid complication, the leucocyte examination gave information of a general nature as regards the severity and progress of the inflammatory condition, but practically no aid in differential diagnosis.

In cases of acute and chronic middle-ear suppuration with intracranial complication, the total leucocyte count was above normal in 88 per cent; the polymorphonuclear percentage was above normal in all of them. If the polymorphonuclear percentage is less than 77, examination of the blood suggests the absence of an intracranial complication; when the polymorphonuclear percentage is above 86, there is strong presumptive evidence of an intracranial complication.

In cases of extradural abscess and sigmoid sinus thrombosis, examination of the leucocytes gave no special features characteristic of the nature and site of the lesion. It must be noted, however, that the cases of extradural abscess seemed to suffer more severely from toxic absorption than the other forms of intracranial complication as shown by the polymorphonuclear percentage.

In the cases of brain abscess the total leucocyte count did not exceed 14,000. In the cases of septic meningitis the total leucocyte counts were decidedly higher than in those of brain abscess, being in no case less than 17,000. The polymorphonuclear percentage, however, was only slightly higher. A total leucocyte count of less than 14,000 suggests brain abscess; a count of more than 17,000 suggests meningitis. This series

of leucocyte examinations also brought out the fact that while the cases showed an almost equal amount of toxic absorption, there was in the meningitis cases a much higher degree of reaction than in the case of brain abscess.

The glycogenic reaction was not of much value, as the presence of pus was already an established fact.

After operation and chloroform anesthesia there was usually a rise both in the total leucocyte count and the polymorphonuclear percentage. This passed off as a rule within four days, at the latest in five days.

TREATMENT OF ULCER OF THE STOMACH.

TOREK (*American Journal of Surgery*, February, 1908) premises his paper by the assertion that the treatment of ulcer of the stomach is essentially medical and not surgical, and that it is only certain of its complications or sequelæ that require surgical interference. The three most important of these complications are perforation, hemorrhage, and stenosis. From a review of careful studies of the subject Torek notes that one out of every four or five cases of gastric ulcer requires surgical treatment.

According to Leube the indications for operation in uncomplicated cases are continued pain, continued vomiting, and loss of strength. When there is no organic stenosis the disturbance of the motor function is due either to reflex spasm of the pylorus or to mechanical obstruction of it caused by hemorrhage into the mucosa or infiltration of it extending to the pylorus. The prominent symptom is the pyloric contraction, causing food stasis and prolonged secretion of hydrochloric acid, thus producing a vicious circle. Though gastroenterostomy is serviceable in cases of moderate dilatation, when the stomach is extremely dilated and the motor function has almost entirely ceased the value of this operation is less certain.

By jejunostomy the stomach may be

given complete rest for a long time, thus regaining its tone, after which gastroenterostomy may be performed and the jejunal fistula may close. As for the results in uncomplicated cases of gastric ulcer, quoting Lieblein, there is about 12 per cent mortality.

Visible hemorrhage occurs in about one-third of all cases of gastric ulcer. Occult hemorrhage is fairly constant. Bleeding is the cause of death in about five per cent of the cases. The bleeding may be acute or chronic. The fulminant hemorrhage is due to an erosion of a large vessel and often terminates fatally before any treatment can be adopted. Operation and survival after such cases is also extremely rare.

Single acute hemorrhage is not an occasion for operation; recurrent or severe hemorrhage is. Tuffier notes of 52 cases medically treated there was a mortality of 1.7 per cent, while surgically treated the mortality was 63 per cent. Taking several statistics together, the cures by operation amount to about 40 per cent. In a large number of cases the ulcer was not found at all at operation. It was only with difficulty detected at the autopsy.

Chronic recurring hemorrhages undoubtedly call for operation. Excision of the ulcer is to be practiced only if the seat of the ulcer is conveniently located. It is stated that in 20 per cent of cases the ulcer was multiple. Gastroenterostomy, as a rule, will suffice to stop the bleeding.

In regard to perforation, Torek states that this complication occurs in about 12 per cent of gastric ulcer. Of those placed on the anterior wall 85 per cent perforate; and but few of these form adhesions to the neighboring organs. He also noticed that the indications for operation are absolute when perforation occurs. The indicative symptoms he considers are intense pain over a strictly localized area and tenderness at that spot, with shock.

From Boyd's statistics the operation mortality in the first twelve hours was 28½ per cent, the second 63.6 per cent, and in the third twelve hours 87½ per cent.

The complication of gastric ulcer most

frequently requiring surgical intervention is pyloric stenosis. This the author states occurs in about 10 per cent of all cases of ulcer. It may be occasioned either by constricting scar or through kinking as the result of perigastritis. There follows necessarily stagnation of food and dilatation of the stomach, usually associated with hypertrophy, particularly in the pyloric region. Motor insufficiency is shown by the presence of food in the stomach seven hours after the administration of soup, beef-steak, and light bread. If the food is delayed for twelve hours or over the insufficiency is considered to be of severe grade. There is very likely to be vomiting if the stomach is not able to overcome the resistance of the pylorus. There is thirst, lessened quantity of urine, constipation, and tetany—i.e., tonic cramps due to autointoxication. The only certain sign of stenosis is the peristaltic contractions of the stomach. The treatment advised is gastroenterostomy.

ESOPHAGO - JEJUNO - GASTROSTOMY FOR THE RELIEF OF ESOPHA- GEAL STRICTURE.

HERZEN (*Centralblatt für Chirurgie*, No. 8, 1908) has proposed certain modifications of Roux's operation which he divides into three stages. The first step of the operation consists in what he calls retrocolic, antethoracic, Y-form jejunostomy. This consists in mobilizing a long loop of the small intestine, bringing this through an opening in the mesocolon and the gastrocolic ligament and upward through a subcutaneous tunnel into the neck.

The second portion of the operation consists in joining the lower end of this mucous canal to the stomach, and the third part in joining the upper end of the mucous canal to the esophagus above the point of cicatricial contracture.

Herzen reports a case thus treated suffering from esophageal closure due to the ingestion of sulphuric acid. The first part of the operation involved a mesenteric cut over 10 inches in length and the ligature of three jejunal arteries. The second stage

was undertaken about three weeks later, the new esophagus being implanted into the anterior wall of the stomach. The third stage was accomplished six weeks later. The esophagus was cut completely through above the upper and more patulous structure which corresponded to the position of the jugulum. The lower end was firmly sutured; the upper end was sutured to the transplanted bowel. A fistula formed the eighth day after operation. Permanent catheterization was practiced from the mouth for some days. The twenty-first day after operation the fistula was closed, the catheter was withdrawn, and the patient swallowed normally. Four weeks later the patient ate bread, meat, eggs, etc., without trouble. It was noted that peristalsis could plainly be perceived beneath the skin each time an effort at swallowing was made.

Wullstein (*Centralblatt für Chirurgie*, No. 8, 1908) notes that in several reported cases the transplanted bit of gut failed to live, and that he had demonstrated some years ago in a total antethoraco-jejunostomy the greater safety of leading the transplanted section of gut through an opening in the mesocolon and the gastrocolic ligament, thus avoiding interference with the circulation of the transplanted loop from colonic pressure.

IDIOPATHIC MULTIPLE HEMOR- RHAGIC SARCOMA.

HARTZELL (*Journal of Cutaneous Diseases*, March, 1908) states that the number of reported cases of this condition is now over 100, one observer having seen more than 50. Hartzell reports one typical case exhibiting numerous round, oval, and irregularly shaped, slightly elevated, dark-brown, for the most part smooth, scaly, firm patches on the dorsum of the left foot and the anterior surface of the leg. The entire calf was covered by a large, uneven patch of pea- and hazelnut-sized, confluent, firm nodules. The disease had lasted fourteen years, with intense itching at the root of the toes and smooth pigmentation on the dorsum of the foot. With the exception

of a patch the size of the thumb-nail, limited to the inner surface of the thigh, the disease was strictly limited to the legs and feet. The patient was treated by antipruritic lotions for the severe itching, the internal administration of arsenic in fairly large doses by the mouth, and the use of the x-ray. The latter was used at intervals of from three to five days, each exposure lasting from seven to ten minutes. Under this treatment there was striking improvement. Excision of the tumor over the external malleolus showed the affection to be hemorrhagic sarcoma, spindle cells being the dominant type. The mucous membranes may be implicated early, but visceral metastases occur late and usually bring about a fatal termination. The bones may be converted into a spongy mass. Spontaneous involution of some of the lesions rather frequently takes place. On the other hand recurrences may follow extirpation of the nodules. The use of arsenic has been warmly commended.

BACTERIAL INOCULATION IN THE TREATMENT OF GONORRHEA.

HUTCHINGS (*American Journal of Dermatology*, February, 1908) has isolated the gonococcus in some cases, prepared a personal vaccine from this and given it with strict regard to the opsonic index. In other instances he has given a personal vaccine without any regard to the index but according to clinical symptoms, while in others he has employed a monovalent or polyvalent stock vaccine either with or without the index. Some cases were treated by vaccine alone; in others there was a combination with local treatment. As to the results of his treatment he notes that eighteen are cured, nine improved, and five are still under treatment. He observes that the course of acute urethritis is materially shortened, and complications are less likely to occur when vaccines are employed together with other treatment. Of the four cases of this condition treated with vaccines alone, in two the discharge stopped after two vaccinations given at intervals

of five days. In the others the discharge was reduced in amount only, but was easily stopped by local treatment. The two chronic cases in which vaccines alone were employed were much improved, but required local treatment to stop the discharge. Five of the cases of arthritis were cured in periods of from eight days to two months. One was greatly improved, while in the other the improvement was only slight. When other vaccines were used with the gonococcus vaccine the discharge diminished more rapidly than when the gonococcus vaccine alone was used. Unless the opsonic index is used as a guide, the frequency and amount of vaccine employed must be governed by the clinical condition. Small doses at four or five days' intervals seemed to give the best results.

As a result of the writer's experience with these cases, he states that while the opsonic index is not necessary to successful treatment it is of great aid when properly carried out in gauging the amount and frequency of the dose; that personal vaccines have shown no marked superiority over stock vaccines; that no particular strain has shown any superiority over any other strain in immunizing power; that better results are secured when other treatment is combined with bacterial inoculation.

TWO CASES OF CAESARIAN SECTION FOLLOWING VENTROSUSPENSION OF THE UTERUS.

PETERSON (*Physician and Surgeon*, December, 1907) in commenting upon the after-effects of ventrosuspension in conjunction with his report of two cases of Cæsarian section writes as follows:

A high position of the cervix is quite a common occurrence in pregnancy following abdominal suspension operations. It was present in both the above cases, perhaps in a rather more marked degree in the first than in the second case. It was noted in 11 per cent of Andrews's cases, and the cervix was near the level of the promontory in 18 of the 21 cases of Cæsarian section following ventrosuspension operations col-

lected by Lynch. This high position of the cervix and the direction in which the external os points are the cause of the dystocia in many cases. In some of the cases it was impossible, or only just possible, to reach the cervix even after the patient was anesthetized and the hand carried into the vagina. Again, the position and direction of the cervix makes version difficult and at times impossible. In a way this is fortunate, for version in the presence of a thinned-out posterior uterine wall is extremely hazardous because of the danger of rupture of the uterus. When the cervix is situated high in the pelvis and backward, vaginal Cæsarian section is contraindicated. It is hard to imagine a more difficult operation under these circumstances.

When the fundus is fixed and the upward development of the anterior wall is impaired, there is a tumor-like mass formed by the hypertrophied anterior wall below the point of fixation. This mass may project over the brim of the pelvis and may even obstruct delivery. Williams, Noble, Martin, Clark and Bowley, Gibert, and Hurdon especially note this condition. It was absent in Peterson's two cases, probably because the attachments of the fundus to the parietal peritoneum were not firm enough.

Malposition of the fetus after abdominal fixation of the uterus is quite common. For instance, transverse positions were noted in 15 out of 21 cases of Cæsarian sections reported by Lynch. These abnormal positions are evidently brought about by the distortion of the uterus due to interference with its free upward development. In the writer's first case the fetus lay transversely; in the second case, while the position was a vertex just before the performance of the Cæsarian section, the patient gave a history of having had a breech in her former labor.

Hurdon has collected 36 cases of Cæsarian section performed for dystocia following ventrofixation, with a maternal mortality of 34 per cent and a fetal mortality of 44 per cent. Such statistics are a serious arraignment of the operation in

this class of cases, if the figures are taken at their face value. But study of the cases shows that the high mortality is due, not so much to the method of treatment as to the fact that the patients had been rendered septic prior to the Cæsarian sections by futile attempts at delivery through the natural passages. Lynch concludes from a study of his own case, and 20 additional cases of Cæsarian section for dystocia following ventrofixation of the uterus, that the best results can be obtained by resorting to the section at the onset of labor, and without any attempt at delivery through the natural passages. Peterson is in perfect accord with this conclusion, and so acted in his last case. In the first case there was no alternative except Cæsarian section, because of the marked contraction of the pelvic outlet.

Laparotomy followed by separation of the adhesions at term before or after the onset of labor is advocated by Hurdon, who reports two successful cases. There have been five such cases with no maternal mortality and the death of two infants. She would except cases in which the pelvic measurements are much below the normal, or in which the whole anterior surface of the uterus is so densely adherent that its separation would leave a wide defect in the surface of the uterus. Circumstances and the operator's skill and experience will be determining factors in the choice between these two procedures. In Peterson's second case freeing of the adhesions might have been followed by uterine adjustment and natural labor, but he has his doubts: whether the weakened uterine wall would have so responded.

But better than all methods of treatment is prophylaxis. The fact that one never can say definitely that a woman will be free from serious dystocia should she become pregnant after ventrofixation or ventrosuspension is enough to condemn the operation in the eyes of the conscientious surgeon. Fortunately, we have at the present time other equally efficacious and far safer operations for backward displacements of the uterus. Peterson advocates shortening the

round ligaments through a single incision, stating that in his hands it has entirely superseded ventrosuspension.

THE ADVISABILITY OF OPERATION FOR RECURRENCE OF HERNIA IN THE SERVICES.

HOLT (*Journal of the Royal Army Medical Corps*, February, 1908) notes that the opinion is prevalent in the army that when a man presents himself with an inguinal hernia recurrent after operation there is no advantage in retaining him in the service, since operation having failed once will do so again. Holt believes that there is abundance of evidence of cure of hernia after relapse in no less than 80 per cent of cases. It is undoubtedly true that the common cause of failure in the first place is sepsis.

As to the technique of operation after recurrence the cutaneous scar of the previous operation is removed, together with the deeper scar tissue, leaving only muscular, aponeurotic, or fascial tissue. Holt states that he has operated on 14 cases of recurrence successfully.

COSTAL CARTILAGE RESECTION BECAUSE OF PERSISTENT PAIN.

BAYER (*Prager Medizinische Wochenschrift*, No. 7, 1908) reports the case of a woman who in June, 1907, noted that the upper ribs on the anterior side of the thorax were forming a distinct anterior projection. This was accompanied by pain in the ribs, in the breast, and in the muscles of the arm, recurring, growing in severity and almost unbearable in intensity on movement. Examination exhibited a deformity of the chest, suggesting that the second, third, and fourth ribs had been powerfully sprung forward. The *x*-ray showed nothing abnormal, nor did palpation demonstrate any local point of tenderness. Six months later the patient was found quite crippled for all work; the condition was the same, excepting the ribs were slightly tender on pressure. The *x*-ray was negative so far as any disease of the bone was concerned. The

condition corresponded to Trendelenburg's disease of the costal cartilages in that it occurred on the right side and involved the second and third ribs. It was not, however, accompanied by emphysema of the lung. Incision showed a thick fibrous perichondrium, the cartilage itself exhibiting the appearance characteristic of old age, whilst in the middle there was a central cavity. The cartilages of the second, third, and fourth ribs were removed. When the operation was terminated the symmetry of the breast was renewed and healing occurred promptly. The patient wrote three weeks later that she experienced very slight pain on movement.

CHANGES IN THE STOMACH AS A RESULT OF THROMBOSIS AND EMBOLISM IN THE PORTAL AREA.

PAYR (*Archiv für klinische Chirurgie*, Bd. 84, Hft. 3) carried out a series of experiments in animals to determine the part played by thrombosis and embolism in the production of hemorrhage, erosion, ulcer, and conditions resulting from these lesions. His conclusions are as follows:

Thrombosis could be produced in the omental veins of rabbits, guinea-pigs, cats, and dogs by freezing with chloride of ethyl spray or by scalding. From these thrombi emboli could be produced which frequently brought about changes in the stomach wall. By the intravenous injection of small corpuscular elements or semisolid fatty substances into the region of the radicles of the portal system changes of varying intensity were produced in the stomach in a majority of the experiments, such as hemorrhage into the mucosa and the submucosa, hemorrhagic infarction, hemorrhagic erosion, and ulcer formation. On microscopic examination the artificial emboli could be found in the vein of the submucosa and mucosa and could be traced into the finest capillaries. The hemorrhages and infarcts interfere with the nourishment of the tissues; this together with the digestive action of the stomach juices brings about such defects as erosion or ulcer. Also injury to the

mesenteric veins may produce similar changes, though not so frequently nor in such great intensity. The circulation in the vessels of the stomach can be impaired not only through the occurrence of retrograde embolism, but also through thrombi situated in various regions. Especially frequently does it appear that thrombosis of the omental veins is communicated to the venæ gastroepiploicæ. The results obtained in animal experiments agree in almost every respect with clinical experience.

THE TREATMENT OF PURULENT AND ULCERATIVE PROCTITIS.

RUGE (*Archiv für klinische Chirurgie*, Bd. lxxxiii, H. 2) reports in detail all the cases of ulcerative and purulent proctitis observed and treated in the first surgical clinic (Körte's) in the City Hospital of Berlin during the past seventeen years—75 in number. Of these 1 was under twenty years of age, 20 between twenty and thirty, 23 between thirty and forty, 28 between forty and fifty, and 3 over fifty. It is noteworthy that this affection is confined almost entirely to females. Out of the 75 cases only 6 were males. The most important feature of the course of these forms of proctitis is the development of a stricture. In 12 of the 75 cases no stricture formed; in the remainder stricture developed at points ranging from 2 to 10 centimeters above the anus. In only 6 of these was the lower part of the stricture higher than 6 centimeters above the anus. In 56 of the 75 cases the cause was determined. In one man the cause was dysentery; in 7 women there was well-marked pulmonary tuberculosis; in the remaining 48 cases there was clear evidence of syphilis in 38; 19 had active gonorrhea, and 9 of these also had syphilis. In 5 of the 19 gonorrheal women gonococci were found in the rectum, and in 5 of the 7 cases of lung tuberculosis the lesions of tuberculosis were found in the rectum. In only 5 of 19 cases in which the rectum was extirpated by operation and examined microscopically had a correct diagnosis of syphilis been made

clinically, yet on microscopic examination 13 of these cases proved syphilitic. The author therefore believes that syphilis plays a much greater part etiologically in ulcerative proctitis than the objective clinical examination indicates.

The methods of treatment are divided into four groups: (a) By cleansing, bougies, etc.; (b) by formation of an artificial anus; (c) by rectotomy; (d) by extirpation of the rectum.

To the first group belong those whose general condition would not permit operation, whose local disease was so far advanced and wide-spread that one could not expect to cure by operation; and those who refused operation. To this should be added two cases whose disease was only in its incipency. Only these two of the 24 cases in this group can be said to have been cured, although the duration of the cure still remains in doubt. Of the remaining 22, 6 died on the day after admission to the hospital of peritonitis (3) or amyloid degeneration (3). In one of these cases the peritonitis followed perforation of the large intestine by a bougie. One other patient died of perforation of the peritoneum by ovarian cancer, and still another of erysipelas. Of the remaining 14, 6 had no stricture; one of these was discharged improved after five months' treatment, while another was discharged after several months in about the same condition as on admission. In the other eight cases the stricture was considerably widened, but the ulceration was scarcely improved.

Of the 17 cases treated by colostomy, none died immediately after the operation. Five were discharged cured. In two of these the artificial anus was closed six months and two years respectively after it was formed, the rectum being soft and free from ulcers. Five died soon after operation of phthisis, perforation, or nephritis. The remaining seven were discharged improved. These results are therefore better than those following conservative methods.

Fifteen cases were treated by rectotomy. In two of these the area which was the

seat of ulcer or stricture was cut out and the rectum sutured transversely. One remained cured, and in the other there was a return of the ulceration three months later, which necessitated a posterior rectotomy, the result of which latter operation could not be learned as the patient disappeared from observation. The other 13 cases were operated upon by resection of the sacrum, splitting of the rectum, curetting and cauterizing the ulcers, suture of the mucous membrane to the skin, and packing with iodoform gauze. The bowels were kept quiescent for five days, then moved with castor oil. The course of healing was usually quite slow. In the majority of the cases the wound closed slowly from its upper end so as to leave the artificial opening at the lower part bordering on the anus. Of these 13 cases, 4 died soon after the operation, 4 were cured, 3 were improved, 2 were not improved, and in 2 there was a return of the ulceration.

Nineteen cases were treated by extirpation of the rectum. One of these died ten days after the operation of diffuse suppurative peritonitis. The case was an unfavorable one, being the subject of gonorrheal vaginitis and pyosalpinx as well as syphilis of various organs. A second patient died of phthisis five months after operation. The remaining 17 patients were discharged cured; of these 12 had complete continence and 3 had continence of firm and mushy stools. Two patients remained incontinent.

The author's conclusions are as follows:

Treatment by medication and local and general antisyphilitic measures results in cure only in cases of proctitis in which ulceration has not yet occurred. Where there is ulceration or stricture the best one can do by medication aided by bougies is to bring about an improvement. The same thing is essentially true when colostomy is added to the medication. Nevertheless, in rare cases a cure is effected in this way in cases afflicted with wide-spread superficial ulceration. Retrograde application of the bougie is not without danger.

If the ulceration does not reach higher than to the sigmoid flexure of the colon,

and if the sigmoid is mobile so that it can be displaced downward, then one can in most cases bring about a cure by extirpation of the affected portion of the bowel. If the ulceration extends above the sigmoid flexure, or if the flexure has a short, wrinkled mesentery, then extirpation is applicable only in isolated cases by employment of the combined abdominal and perineal method. The pure perineal method is suitable only for operation upon the lower part of the bowel. In general in women the vaginoperineal incision with median sacral incision and resection of the sacrum and coccyx is to be recommended. The excision of the stricture by a sacral incision with subsequent transverse suture of the rectum is applicable only when the ulceration is circumscribed and shallow.

Posterior rectotomy is to be done if the conditions for extirpation are not favorable. If, however, the character and severity of the affection demand a surgical operation, the prospect for cure is rather slight. Nevertheless, cutting of the sphincter to permit a free outflow of secretion must be accomplished. The prospect of later incontinence must not be taken as a contraindication for this operation.

The cause of ulcerative proctitis and consequent stricture is usually syphilis. However, tuberculosis, dysentery, and gonorrhea play a part. The cause is without significance, as it cannot usually be known clinically.

INTRAGLANDULAR ENUCLEATION FOR GOITRE.

REVERDIN (*Surgery, Gynecology, and Obstetrics*, March, 1908) thus summarizes the advantages of intraglandular enucleation of goitre:

It does not expose neighboring structures (recurrents, etc.) to immediate or subsequent lesions.

It saves all the healthy thyroid tissue as well as the parathyroids, consequently avoids thyroid or parathyroid insufficiency.

It leaves, in case of recurrence, the possibility of intervention without exposing the patient to the dangers of myxedema.

Its results are very good from the cosmetic point of view, and its rate of mortality is very low.

The danger of hemorrhage that might occur has been much exaggerated, and if recurrences are more frequent than after partial thyroidectomy, they are amenable to operation without serious consequences.

Intraglandular enucleation is not useful except for benign encysted tumors, liquid or solid. It is contraindicated if the tumors are exceedingly vascular, or adherent to the enveloping gland, because of previous treatment or inflammation.

THE TREATMENT OF INFLAMMATORY STRICTURE OF THE RECTUM.

CLAIRMONT (*Archiv für klinische Chirurgie*, Bd. lxxxiv, H. 1) says that operative treatment of inflammatory stricture of the rectum is proper when treatment by bougies and enemata has been used without good result or cannot be practiced. Any stricture of the rectum which will allow a small bougie to pass can be widened by systematic application of the bougie, but this treatment is slow and tedious and not without danger, due to peritonitis following perforation of the rectum. The only practicable operations to choose from in the majority of cases are rectotomy, extirpation, and colostomy. Rectotomy is practiced only when the stricture lies just above the anus and is limited in its progress upward. Where the stricture involves the anus, rectotomy is not done, as the patient is thus rendered incontinent, which is a worse condition than stricture. The only method of extirpation to be considered is resection, but this can be done only when the anus is uninvolved. Amputation brings about conditions which are unfavorable because the patient is seldom continent after this operation.

The object of the author in this communication is to advocate dilatation of inflammatory stricture of the rectum by the bougie passed through a fistula of the large intestine. In von Eiselsberg's clinic from 1901 to 1907, 20 cases of mild stricture of

the rectum were treated. In seven colostomy was done. The remaining cases were either in their early stages or were of moderate development and yielded to the bougie or rectotomy. Of the seven patients in which colostomy was done, six were treated by the bougie passed downward through a fistula made in the large intestine. In three cases the fistula was later closed. One patient died six months after operation of tuberculosis.

The colostomy was made as near the anus as possible, and, as a rule, in the region of the sigmoid flexure—exceptionally in the descending, transverse, or ascending colon. The colostomy wound was, when possible, placed laterally and was made large enough not only to allow most of the fecal matter to pass through but also to permit the use of the bougie without the pain produced when only a small opening has been made.

In the first week after colostomy the distal portion of the intestine is washed out with different solutions either from the colostomy wound or from the anus. The solutions used may be 3-per-cent boric acid, silver nitrate 1:2000 to 1:500, protargol 1:500, tannic acid $\frac{1}{2}$ to 1 per cent. At the same time, in syphilitic stricture, antiluetic treatment should be used, although local results are not to be expected from it. As a bougie a conical tube 2 centimeters in diameter at the thicker end and 2 meters long is used. This is obtained from the rubber works of C. Müller in Berlin. In order to pass the bougie a silk ligature is tied on the end of it. This ligature is placed in the colostomy wound and an endeavor made to carry it through the rectum and out the anus by the injection of the cleansing fluid. If this does not succeed, then the fecal stream is depended upon to carry it through. Meanwhile the fistula is closed with strips of plaster and the patient given a dose of castor oil. If this fails an endeavor is made to pass a thin esophageal bougie upward from the anus. If all these measures fail a posterior rectotomy is done, and by this means the silk ligature is carried through the stricture. The bougie is then well lubri-

cated with oil or vaselin, and with steady, slow traction pulled through as far as possible.

The bougie is allowed to remain in the rectum one hour. Immediately after the use of the bougie the patient frequently complains of tenesmus and pain in the anus. The introduction of the bougie is repeated daily. Not seldom while undergoing this treatment there is a febrile reaction. This is due to proctitis and resulting abscess formation. The fever subsides with the opening of the abscess. During the fever the use of the bougie must be discontinued. It is usually seen that the stricture rapidly becomes wider and the exudate of pus and blood grows less. When the stricture has become so large that the ordinary rectal bougies can be passed through, then bougies are used by way of the anus. When this procedure has been learned by the patients and the exudate of pus and blood has disappeared, the colostomy wound can be closed.

Dilatation must afterward be kept up. The same principle applies here as in stricture of the esophagus and urethra.

TREATMENT OF BASAL-CELL CARCINOMA OF THE SKIN AND MUCOUS MEMBRANES.

CLAIRMONT (*Archiv für klinische Chirurgie*, Bd. lxxxiv, H. 1), following Krompecher, applies the name basal-cell carcinoma to those epithelial tumors which spring from the corium in contradistinction to those which grow from the epithelial layer proper. He says it is of little consequence whether they are called basiliomata, matrix-, corium-, or basal-cell carcinoma. The cells may be cubical, ovoid, or cylindrical. The author reports in detail 19 cases, 11 of which were of the face, 2 of the scalp, 3 of the trunk and extremities, and 3 of the mucous membranes. The conclusions of the author are as follows: The carcinomas of the skin are best differentiated according to their histogenesis into basal-cell cancer, flat-cell cancer, and transition forms. This is especially to be

recommended, inasmuch as in this way clinical differences are indicated which frequently permit the separation of squamous from other forms of carcinoma. The basal-cell carcinoma in the region of the inner angle of the eye has a peculiar malignancy which is not observed in other localities. The rodent ulcer is a form of basal-cell cancer. The principle of histogenetic classification receives further support in the control exercised by the x -ray. The basal-cell carcinoma, even when wide-spread, can be made to completely disappear under the influence of the x -ray. This treatment gives excellent cosmetic results and the duration of the cure is satisfactory. Squamous carcinoma, however, is not favorably influenced by the Roentgen ray. For these cases excision is necessary. Basal-cell cancer is rare upon the trunk and extremities.

TRANSVERSE SUPRAHYOID PHARYNGOTOMY PRELIMINARY TO REMOVAL OF NASOPHARYNGEAL TUMORS.

HOFMAN (*Archiv für klinische Chirurgie*, Bd. lxxxiii, H. 1) discusses the method of reaching tumors of the nasopharyngeal region by temporary resection of both upper jaws after the plan of Kocher, and reports two cases. He also reports a case of removal of a tumor from this region after rendering it accessible by first performing transverse suprahyoid pharyngotomy. He states that this preliminary operation stood the test well so far as exposing the site of the tumor was concerned. The pharyngotomy wound was not longer than five to six centimeters. On account of the unusual extensibility of the tissues in this region, by holding the edges of the wound apart with blunt hooks the tumor could be removed in full view. The bleeding from the pharyngotomy wound was well controlled, so that during the removal of the tumor no blood from this preliminary wound interfered. There was no wounding of the tumor itself during the preliminary operation, as is the case in going through the upper jaw, and in the removal of the tumor bleeding could be well controlled as every-

thing was in plain sight. Also, if the bleeding should be severe, one could easily search out and ligate the external carotid artery through the pharyngotomy wound. Search can also be made through it for metastases in the upper jugular lymph glands. The tongue can be so far drawn forward with hooks without any injury to it that the entire soft and hard palate can be thoroughly exposed for splitting or removal. The pharyngotomy can be carried out under local anesthesia.

The cosmetic result of the operation is good, since the scar lies in the least exposed part of the neck. The aspiration of blood during the operation is less likely than by the method of resection of the upper jaw. After the pharynx is opened the anesthesia can be kept up by carrying a drain the size of the finger through the glottis into the trachea. This also prevents the inflow of blood and mucus. If bleeding is severe the head should be kept low. As the mechanism of deglutition is not in the least injured the danger of aspiration phenomena is not so great as when subhyoid pharyngotomy is practiced.

The patient operated upon by the author by this method swallowed fluids without difficulty on the third day after operation. Of the five cases in which transverse suprahyoid pharyngotomy has been done, none have died of aspiration pneumonia. Two, however, died. In one that died the day succeeding the operation autopsy revealed a fatty *cor bovinum*; the other died in ten days of heart failure. Both individuals were aged.

CHRONIC CYSTIC MASTITIS.

SPEESE (*University of Pennsylvania Medical Bulletin*, January, 1908), in view of the fact that this affection constitutes 13 per cent of all breast diseases, holds that it is well worthy of careful study from the standpoint not only of the diagnostician, but from that of the surgeon. Two types occur with equal frequency, those in which the growth is distinctly cystic, and those in which the epithelium of the cysts is hyperplastic. Histologically the proliferative

class is subdivided into those in which the epithelial proliferation occurs in the acini, those showing the presence of distinct papillae in the cysts, and those characterized by the formation of adenomatous areas. In cases characterized by adenomatous proliferation the tendency toward malignant degeneration is most likely and the carcinoma is usually of the glandular type. As the characteristics of these groups are recognizable only on microscopic examination, and as the cases symptomatically are identical with other forms of the disease, it can readily be appreciated that operative interference and careful microscopical study of the breast tissue of the wound are always indicated in chronic cystic mastitis. The gross appearance of the diseased tissue is generally characteristic, being made up of a dense white mass of the fibrous tissue containing cysts of varying size. Usually the greater part of the breast is involved, though occasionally the process is circumscribed. Induration in some instances is not unlike that of carcinoma. The cysts vary in size from that of a pin-point to that of an egg, with either clear or discolored contents. The disease usually occurs in women approaching the menopause, though it is found at an earlier age. It is usually discovered by accident, grows slowly, at times rapidly, and if not diffuse is usually found in the upper outer quadrant of the breast. The affection is at times bilateral, is exceptionally painful, and occasionally tender on palpation. The axillary lymph nodes may or may not be enlarged, but are not as hard as the glands characteristic of cancer. The diagnosis can be made only by removal and microscopic examination, and since malignancy is always likely to become engrafted upon these cysts operation is always indicated.

Warren's technique is advised. An incision is made at the base of the breast extending to the inner border of the axilla, in order to cut the lymph vessels running from the breast to the axilla. The breast is freed from the pectoral muscle and reflected upward in order to expose its posterior surface. Cysts or indurations can

then be removed by excising V-shaped sections, and the breast explored by radiating incisions in any direction. The openings are closed with catgut, and if a large portion of the gland has been removed, a purse-string suture will bring the remaining tissue together, so that when the skin edges are once more in apposition there is a distinct protrusion of the nipple and the organ retains its characteristic shape. The operation is almost invariably followed by cure, the cysts rarely recurring, and the cosmetic result is most gratifying.

TRANSPLANTATION OF THE PARATHYROIDS AND ITS PRACTICAL SIGNIFICANCE IN SURGERY.

LEISHNER (*Archiv für klinische Chirurgie*, Bd. lxxxiv, Heft 1) undertook a series of experiments carried out in different ways in order to determine whether or not the parathyroids can be transplanted with full retention of their specific function. About eighty rats were operated upon, but only a part of the results are reported, as some of the animals did not withstand the repeated operations, while others died of intercurrent disease before the end of the time of observation.

Animals were used only when, after laying bare the thyroids and parathyroids, the latter structures were in plain sight, so that they might be removed without taking with them part of the thyroid. The bodies were always transplanted either into a pocket in the rectus or between the rectus and peritoneum, because the preparation of another, perhaps better, place of transplantation appeared to be too severe an operation for the animals to endure.

In control animals in which the thyroids without the parathyroids were transplanted into the belly wall and later removed no unfavorable symptoms developed. In the animals in which both parathyroids were transplanted one after the other at intervals of ten to thirty days into the belly wall no untoward symptoms developed, while in those in which both parathyroids were transplanted at the same time symptoms

of tetany showed themselves the next day, the same as if both parathyroids had been completely removed. If the successfully transplanted parathyroids were removed three or four weeks after transplantation, symptoms of tetany appeared on the next day. The animals either died in a couple of days with acute symptoms, or later on of trophic disturbances. The experiments of the author with transplantation of foreign glands are not complete, but he reports one case in which were transplanted into one rat the parathyroids of another rat and later the parathyroids of the experimental rat were removed, but although two months have expired since the removal the rat shows no signs of tetany. The author thinks these experiments indicate that it would be advisable in cases in which, on account of the hurry of operation, because of severe hemorrhage, or other cause, the parathyroids have been unintentionally removed to immediately reimplant them. He recommends the belly wall for such reimplantation. By this means it may be possible to prevent the tetany which would otherwise supervene.

THE OPERATIVE TREATMENT OF GONORRHEA IN THE FEMALE.

BIERHOF (*New York Medical Journal*, Jan. 11, 1908) states that the procedures which he has employed with success are as follows:

A microscopical examination of the urethral secretion, or scraping, and of the secretion showing at the vulvar orifice.

Cleansing of the meatus, and irrigations of the urethra and surroundings with a solution of one-quarter to one-half-per-cent solution of protargol. Either the hand syringe or the irrigator may be employed, but no great degree of pressure should be employed. In all about 150 cubic centimeters are used for the urethra and surroundings, after which about 150 cubic centimeters of the fluid are injected, through the urethra, into the bladder, to be later expelled by the patient. In this latter irrigation the patient is instructed to relax the

muscles as though about to urinate, when the urethra feels distended, whereupon the fluid will be found to flow easily into the bladder.

Cleansing of the vulva with 150 cubic centimeters of the solution.

A vaginal scraping is now made and examined, the sterilized platinum loop being passed well into the vagina for this purpose.

The nozzle of the syringe is gently inserted into the vagina, the stream of the solution during this time passing into the vagina, and the nozzle inserted up to the point where the body of the syringe blocks the outlet. The syringe blocking the outlet to prevent the escape of the injected fluid, the injection is continued until the vagina becomes distended with this solution, which is then allowed to flow out.

About 30 cubic centimeters of the solution are used for this vaginal cleansing.

A sterilized speculum is inserted into the vagina—preferably of the duckbill type—and the vagina, particularly the fornices and the cervical orifice, cleansed by gently wiping with little cotton pledgets.

A specimen of the cervical secretion, or a scraping from the cervical canal, is now made with the sterilized loop, and a microscopical examination thereof made. Should this be found to be free of gonococci and to contain few or no pus corpuscles whatever, then the vagina is lightly tamponed with several yards of narrow, absorbent gauze strips, saturated in one-per-cent protargol solution, and the speculum withdrawn. The writer employs the tamponade whether the vagina be infected or not. If it be infected, he employs a five-per-cent solution. There is then an exfoliation of the superficial epithelial layers, and usually, in from twenty-four to forty-eight hours, the vaginal secretion will be found to be sterile. If the vagina be not infected, its infection is prevented by this tamponade.

A soluble urethral bougie of five-per-cent protargol in cacao butter, an inch and a half in length, is inserted into the urethra and left therein.

While the index-finger of the left hand

maintains the urethral bougie in place by pressure of the finger against the meatus, a pad of absorbent cotton, saturated with one-per-cent protargol solution, is placed over the urethral and vulvar orifices and kept in place with a "T" binder. As the patient has urinated in emptying the bladder of the fluid injected into it, she is now instructed to resist the desire to urinate, if possible, for several hours, so that the drug in the melting bougie may be kept in contact with the urethral mucous membrane for as long a period as possible. The pad covering the vulva is also kept moist with the one-per-cent protargol solution.

Rest in bed, if possible, is of advantage in the treatment. Bland diet should be ordered, all intoxicating or carbonated drinks avoided, and all highly spiced articles of food omitted from the dietary. A daily warm sitz bath, in the evening, completes the treatment. The tampon is left in place for twenty-four hours, whereupon it is removed by the physician, and the treatment, as outlined, repeated. Should the patient desire to urinate, the moist pad is simply removed, to be replaced at once thereafter. Under this treatment, within twenty-four to forty-eight hours, if the cure is to prove a success, the urethral secretion must be free of gonococci, as must also the vulvar and vaginal scrapings. After two such applications, if there be no more gonococci present, it is the author's custom to begin the tests by omitting entirely the urethral irrigation and bougie, and by substituting a vaginal irrigation of bichloride of mercury solution 1 in 4000, or a solution of one-half-per-cent zinc sulphocarbolate, for the irrigation with protargol, and the vaginal tampon is entirely omitted. The warm sitz baths are, however, continued for a few days longer. Should the test of the interruption of treatment be followed by no return of gonococcus-bearing secretion, then we proceed to the alcohol test. Further control examinations must be made at intervals, and only when the urethral and cervical scrapings continue free of gonococci, even after the next following menstruation, may the patient be discharged as definitely cured.

Should discharge with gonococci reappear during the tests, then we simply continue with the treatment until the patient is cured.

CHOLECYSTOTOMY AND CHOLECYSTECTOMY AS PRACTICED IN THE CLINIC OF MR. MOYNIHAN.

COLLINSON (*Surgery, Gynecology, and Obstetrics*, January, 1908) gives a brief description of Moynihan's technique, which is as follows: Twenty minutes is spent sterilizing the hands of the surgeon. After a preliminary wash with a nail-brush and soap beneath a stream of hot water, the hands and arms are mechanically cleansed with sterile swabs and a nail-cleaner in a bath of sterile water for at least five minutes, and are then rubbed with a solution of 1 to 500 of sublamin in 70-per-cent methylated spirit. The latter is allowed to dry upon the hands. The second and third baths of sterile water are used, the same routine being carried out, the sublamin spirit being applied after each scrubbing. The assistant then puts on a pair of rubber gloves, gives the patient's abdomen a final cleansing with ethereal soap, and finishes by swabbing the whole operation area with sublamin spirit. The gloves are then removed, the hands again cleansed with spirit, and a clean pair of gloves put on and the arms covered by sterilized sleeves which pass beneath the cuff of the gloves. Sterilized caps and mask are worn by surgeon and assistants.

Under the patient's back an inflatable rubber cushion is placed at or a little above the level of the liver, and as soon as anesthesia is progressing the cushion is inflated by a foot pump. Moreover, the table is tilted so that the pelvis is slightly lower than the thorax. Over the site of the incision in the skin a number of light transverse scratches are first made with a needle, these marking the position for the insertion of the deep silkworm-gut sutures for the closure of the wound. A four- or five-inch cut is made near the outer margin of the right rectus, beginning at the costal margin and extending vertically downward. The

muscular fibers are separated with the finger, the branches of the intercostal nerves being preserved intact as a rule. The bleeding points in the muscles are either ligatured or sutured at once. The surrounding skin edges of the wound are protected by the "handkerchief" of "tetra" placed upon each side and held in position with special forceps, which fix its margins to the sheath of the rectus and the extremity of the wound. This because bacteriological study has shown that most of the infection in wounds comes from the patient's skin, and in no operation should the skin be seen after the incision has been made. Usually exploration of the ducts is facilitated by extension of the wound upward and inward parallel to and half an inch from the costal margin. The posterior sheath of the rectus is picked up between two pair of forceps and incised. The peritoneum is opened, and the opening is enlarged by scissors protected by a finger passed within. The operative area is then isolated by large flat gauze swabs. The first is packed down to the upper part of the right kidney pouch; it is large and should lie between the duodenum and common duct on the inner side and the abdominal wall on the outer. A second slightly smaller swab is passed toward the middle line, lying over and protecting the stomach to the inner side of the gall-bladder and common duct. A third swab is placed below, packing the small intestines and colon out of the way, and protecting them; occasionally more than one swab is necessary in this situation. All the swabs are provided with tapes; each before being inserted is wrung out in hot sterile salt solution.

The gall-bladder and ducts are next carefully freed from adhesions, which if thick may require ligature and division. When all the ducts are laid bare the gall-bladder and the liver around it is seized with the left hand and gently dragged downward, thus exposing the ducts more fully and allowing thorough palpation of them. If calculi are present in the gall-bladder, a large square consisting of four layers of gauze between which a sheet of rubber

tissue has been sewn, in the center of which there is a small hole, is placed over the gall-bladder. Through the central hole a pair of catch forceps is passed which seizes the fundus of the gall-bladder and pulls it through until a cone of gall-bladder presents. The square is then so arranged as to cover and protect the rest of the operation area. An aspirating needle with a rubber tube passing over the side of the table is pushed into the gall-bladder, which is held by forceps applied about three-fourths inch apart. After withdrawal the needle is placed on one side and not touched again, the puncture is enlarged with scissors, and the escaping bile rapidly mopped up by an assistant with moist gauze swabs held in long-handled forceps, each mop being thrown away immediately it has been used, and great care being taken to avoid soiling the fingers with bile, which should always be regarded as a septic fluid. The grip of the forceps is changed so that the edge of the incision is seized, and by this means the wound may be held open, or closed when they are crossed.

Through this opening a gall-stone scoop is passed and the calculi are removed. When all the stones which can be felt with the scoop have been removed, the clips are crossed so as to close the opening, and whilst the left hand steadies the fundus the right is passed beneath the protecting rubber and gauze sheet, and the neck of the gall-bladder and cystic duct are carefully palpated; if other calculi can be felt in this situation, an attempt is made to dislodge them by gently milking them back into the gall-bladder between the index and middle fingers. They may be dislodged by the scoop working in concert with the fingers externally. The common duct is finally explored, and if no calculi are found to be present the gall-bladder is drained by means of a rubber tube one-third of an inch in diameter and with thick walls, which is inserted into the incision so that two or three inches are laid within the gall-bladder, where it is fixed by a single catgut stitch which passes through all the coats of the gall-bladder with the exception of the mu-

cosa, close to the margin of the incision, and through the tube; this is tied and fixes the tube firmly. This suture is left long. The remainder of the incision and this stitch are now buried by a continuous catgut suture from side to side, taking all the coats with the exception of the mucosa. This suture embraces the tube closely and invaginates the exposed mucous membrane, so that no leakage can occur. After the fundus has been cleansed with moist gauze mops the rubber and gauze sheet is removed by slipping it over the drainage-tube, all instruments which have been exposed to the risks of soiling are laid on one side, and the hands are carefully rinsed, or if soiling has occurred a fresh pair of gloves is put on.

The swabs in the abdomen are now removed and the right margin of the omentum arranged so as to cover the intestines and surround as much as possible the gall-bladder and tube.

The abdomen is closed in the following manner: After deflating the rubber cushion beneath the patient a catgut suture is commenced at the lower angle of the wound, including the peritoneum and the posterior sheath of the rectus; this is continued slightly beyond the middle of the wound. The suture is then temporarily laid aside and a similar procedure adopted for the upper portion of the wound, commencing above and terminating below at the gall-bladder.

Silkworm-gut sutures, about one inch apart, inserted along the scratches previously made, are next passed through the skin, anterior sheath, and muscular tissue of the rectus on either side, and left untied for the moment until the catgut sutures, which were temporarily laid aside, can be continued through the anterior sheath of the rectus to their starting-place below and above and tied off. The sheath of the muscles is overlaid by the suture, which is an interlocking one. The skin edges are brought in apposition by Michel's metal sutures, and finally the silkworm-gut sutures are tied loosely and without tension and kept in position by a solution of formalin mm20 in 1 ounce of sterile gelatin.

Outside of this a light covering of wool and a many-tailed bandage is applied; the drainage-tube is then brought through and its extremity placed in a U-shaped glass tube, which is suspended to the side of the bandage by safety-pins. In this manner the dressings are kept entirely dry, movements of the patient do not displace the tube from the vessel for the reception of the bile, and an accurate measurement of the amount of drainage is obtained.

The metal sutures are removed at the end of forty-eight hours, the silkworm-gut stitches at the end of ten days or a fortnight. The tube usually comes away in about a week.

In cases in which cholecystectomy is decided upon, the operation is performed as follows:

The liver being rotated, the cystic duct and its junction with the common duct are defined; at a short distance from its termination a circular incision is made around the cystic duct and a peritoneal cuff reflected toward the common duct. Two pair of long forceps, each with a curved beak, are now applied to the cystic duct, which is divided between them, the stump is ligatured with catgut, and the forceps upon this end removed. By gentle gauze stripping the cystic artery is next defined, divided between forceps, the proximal end ligatured, and the clip removed.

If it be decided not to drain the ducts, the stump of the cystic duct is buried by suturing the reflected cuff over it by two or three sutures of Pagenstecher's thread; before this is done the gall-bladder is separated from its fossa for a short distance by insinuating the finger gently between its pelvis and the under surface of the liver. This separation is at first only carried sufficiently far to allow of access to the stump of the duct, for the suturing is much facilitated by the traction which can be made upon the liver by the partially separated gall-bladder. The stump is touched with the cautery and then buried in the manner described.

The further separation of the gall-bladder can now be proceeded with. By careful

dissection with the gauze-covered finger, the gall-bladder is raised from its bed with comparative ease and is left attached only by the peritoneal fold around it; this is divided with scissors about half an inch from the liver, and the gall-bladder is free. A raw surface surrounded by a peritoneal collar is now left; some slight bleeding may occur from this or from the cut edges of the peritoneum, but sponge pressure is usually sufficient to arrest it; if this is not so, bleeding points on the raw surface may be underrun by a fine catgut suture, or if upon the peritoneal edge, included in a ligature.

The peritoneum around the raw surface is now closed over by a continuous catgut suture commencing at the cystic duct and terminating at the margin of the liver. The operation area is finally cleansed and the abdomen closed.

If drainage of the ducts be necessary, the stump of the cystic duct is not ligatured, but its edges are seized with small French vulsella and an incision made into it at its junction with the hepatic ducts of sufficient size to admit a rubber drainage-tube; this is fixed by a catgut suture which passes through it and picks up the wall of the duct with the exception of the mucosa at a little distance from the cut edge. The rest of the opening is closed snugly around the tube by catgut sutures passing from side to side of the incision and taking the peritoneal and muscular coats only.

In certain other cases it may not be thought necessary actually to drain the ducts, but some doubt may be felt as to the security with which the stump of the cystic duct has been covered in, or it may have been impossible to sequestrate it by a peritoneal cuff. In such a case, after ligature with catgut and removal of the gall-bladder, a rubber drainage-tube is passed down to the stump of the duct and retained in position by a catgut suture passed through it and catching up the tissues by the side of the ligated extremity. When the catgut ligature around the duct softens, as it will do in four or five days, bile may flow through the tube for a short time; in other cases no discharge of bile

occurs, and on separation of the suture holding the tube (about a week) the wound rapidly closes.

THE TREATMENT OF KIDNEY TUBERCULOSIS BY MEANS OF THE ROENTGEN RAYS.

BIRCHER (*Münchener medizinische Wochenschrift*, Jahrg. lix, No. 51) says that although the treatment of kidney tuberculosis is generally surgical, yet operation cannot be carried out in all cases because of generalized tuberculosis or because the disordered function of the kidneys contraindicates operation. There are also patients who absolutely refuse operation. The prognosis of these cases is bad, and most of them go on to a fatal termination in from a month to two years. In these cases the use of turpentine, guaiacol, and creosote preparations, together with flushing of the body with an abundance of water and the use of urinary antiseptics, is desirable, but beyond this little can be done. It may happen in isolated cases that the tuberculous process may undergo a spontaneous cure, but as a rule there is only a temporary arrest of the process through medical and local treatment. In two patients the author used the x -rays as a therapeutic measure. In both cases the tuberculous process was brought to a standstill, although the author will not venture to state that there has been either clinical or anatomical cure. The first patient, a woman, was in bad condition on admission and had tuberculosis of both kidneys and the bladder. The x -ray applications were kept up for three months, at the end of which time the patient was discharged in good condition. She remained in this improved state up to the time of the report, two years later.

The second patient was a woman thirty-six years of age. She was found to be suffering from tuberculosis of the left kidney and the bladder. After five weeks' treatment with the x -ray she was discharged much improved. Three years later she returned to the clinic to express her thanks, and was so strong and healthy looking that neither the doctor nor the attendants knew her.

In both cases the urine cleared up, and albumin and tubercle bacilli disappeared. The treatment consisted in daily exposures over the back for fifteen minutes to a tube of medium strength at a distance of 20 to 25 centimeters. The bladder was irrigated daily with boric acid solution. General hygienic and roborant measures were observed.

THE TREATMENT OF PERITONITIS.

SIEGEL (*Wiener klinische Rundschau*, Jahrg. xxi, No. 52) says that peritonitis is nowadays frequently met by the busy practitioner, and that it must be diagnosed at its beginning, so that by early treatment we may avoid the advanced form of the disease. It must be borne in mind that almost every general peritonitis began as a local peritonitis, and that the latter is in almost every case curable. On account of the fact that the individual symptoms of peritonitis are uncertain the disease is rendered very difficult of diagnosis. The most experienced surgeons have operated for what appeared to be peritonitis, yet no peritonitis was found. While the author considers every operation which is unnecessary to be harmful, nevertheless errors in cases of peritonitis cannot always be avoided. However, mistakes are oftenest made in considering peritonitis absent when it really is present. Surgeons see many cases of peritonitis which they barely save by operation, and also lose some which they are convinced might have been saved by earlier operation. If one has a patient with severe abdominal pain, perhaps ushered in with vomiting, who shows even a slight rise of temperature with a local point tender to pressure, and at this point contraction and rigidity of the belly wall, this case should be treated as one of peritonitis.

While it may be true that in rare cases spontaneous cure of peritonitis takes place, yet it is well not to depend upon this, especially in the suppurative forms, for which the treatment is surgical. The most important step in the operation is the removal of the source of infection and the walling off and drainage of the pus. It is

often difficult to find in the abdomen the source of infection, but if it is not found the operation is unsatisfactory and the result uncertain. In diffuse peritonitis several incisions must be made in order to give exit to the pus, and through these gauze or drainage-tubes should be put in. In this way the time of operation is not prolonged. Lengthy operations with eventration and prolonged irrigation are conducive to severe shock and should be avoided. If there is much distention of the intestines and vomiting, then it is advisable to produce a fecal fistula in the small intestine. The author has in this way saved a series of patients who would otherwise have been lost. Sometimes the fistula has been established as late as eight days after the first operation in cases in which the disease did not yield well.

The after-treatment of these cases is very important. The author formerly used atropine, but has recently lost confidence in it. In reference to the use of salt solution, while he still uses it in diffuse peritonitis, he finds its good influence to be only temporary. Through careless use of salt solution more harm than good may be done. The author has generally succeeded with 200 to 300 cubic centimeters given per rectum two or three times a day. However, in marked paralysis of the intestine better results are obtained by allowing the intestine to have absolute rest.

If there is much vomiting the stomach should be washed out, and the heart should be sustained by camphor and ether. Hot compresses upon the abdomen are often of use. Nutrient enemas should not be given, as one gains little by forced feeding so long as vomiting lasts. Morphine may be used in small doses for the pain, but not until the diagnosis is established, for its early use masks the symptoms and interferes with diagnosis. The results of operation depend upon the time at which it is done. The earlier the case is operated upon, the more favorable the results will be. Cases are seen by the author much earlier now than ten years ago. In his earlier experience he lost four cases out of ten, while in the

last two years out of forty cases only five have been lost. The most important thing is the proper treatment of the local focus of peritonitis, by which means it is probable that nearly all cases may be saved.

BACTERIOLOGICAL EXAMINATION OF THE BLOOD OF THE SINUS IN THE DIFFERENTIAL DIAGNOSIS OF OTITIC SINUS-THROMBOSIS.

NUERNBERG (*Münchener medicinische Wochenschrift*, Jahrg. liv, No. 51) says that the diagnosis of otitic sinus-thrombosis rests up to this time almost entirely upon the temperature rise. Some cases, however, in which there is for some reason no rise in temperature are therefore not diagnosed; also some cases of otitis accompanied by high fever are not examples of sinus-thrombosis. The method consists in taking at the same time blood from the sinus and from a vein of the arm and making cultures of it. In the event that the number of colonies of bacteria in the culture from the sinus greatly exceeds the number in the blood from the arm vein, then it is to be concluded that the thrombus lies much nearer the point of puncture of the sinus than the point of puncture in the arm, for in thrombosis, when the blood retains its bactericidal properties, the farther removed from the seat of the thrombus the fewer the bacteria. Of the cases investigated in this way there were four of sinus-thrombosis in which the sinus blood showed numerous colonies of streptococci in pure culture, while cultures from the arm vein were sterile. In a fifth case of beginning sinus-thrombosis the cultures from the sinus blood also remained sterile. In the pre-thrombosis stage bacteria are also present in the sinus blood, therefore bacterial examination alone is not sufficient to settle the diagnosis when the cultures are positive. In such event the sinus walls should be exposed, and there should then be a delay of three days to see if the fever subsides or not. If it does not, sinus-thrombosis is present. Many more experiments are necessary in order to establish the correctness of this means of diagnosis.

REVIEWS.

MODERN MEDICINE: ITS THEORY AND PRACTICE. In Original Contributions by American and Foreign Authors. Edited by William Osler, M.D., assisted by Thomas McCrae, M.D. Volume IV, Diseases of the Circulatory System—Diseases of the Blood—Diseases of the Spleen, Thymus and Lymph Glands. Illustrated; 865 pp. Lea & Febiger, Philadelphia and New York, 1908.

The fourth volume of Osler's *Modern Medicine* is the product of eleven contributors, several of whom have considered two or more subjects.

Part I comprises thirteen chapters and treats of Diseases of the Circulatory System. The opening chapter, by Hoover, deals with general considerations of cardiovascular disease, and is largely devoted to a correlation of the normal physiology of the heart with modifications occurring in disease.

McPhedran has contributed a forty-eight-page article on Diseases of the Pericardium. As a rule the space is wisely allotted, although it appears hardly consistent to give more pages to hemorrhagic pericarditis than to the purulent form of pericardial inflammation. The author attributes frequent failure to diagnose tuberculous pericarditis to the overshadowing influence of other conditions; it might be well to admit that a certain number of these cases escape the diagnostician because of careless or superficial examination. Only indirectly is the value of cytodagnosis considered.

Chapter III, dealing with Diseases of the Myocardium, is by Babcock, and in forty-four pages devoted to the subject the author has incorporated an immense amount of carefully weighed, valuable clinical information. He braves the academic discussion as to whether the myocardial change seen in diphtheria, typhoid fever, influenza, and other acute infectious diseases is inflammatory or degenerative, and considers it under the head of Acute Parenchymatous Myocarditis. Wise clinician that he is, one constantly observes him securing the best results by treating the patient rather than the disease. The brief and often totally inadequate directions for treating these cases are

in this paper given detailed consideration; each resource and symptom is reviewed separately and the indications clearly set forth.

The senior editor writes the chapter on Acute Endocarditis; the usually recognized forms—acute simple and acute ulcerative—are fully considered, but recurrent and septic types are also described. Very properly malignant endocarditis is looked upon as a septicopyemia. With regard to the prophylaxis of endocarditis, the author clearly advocates a more vigorous and systematic attack on the enlarged tonsils and adenoids of childhood. Prolonged rest in bed, for a period exceeding three months, he regards as the best measure for securing a functional and possibly structural restoration of the affected valves. The author has been discouraged with the antistreptococcus serum, but recommends bacterial vaccines in those cases in which blood cultures can be obtained.

Chapters V and VI, occupying fifty-four pages, discussing the closely related conditions, Hypertrophy, Insufficiency, and Dilatation of the Heart, are by Alexander G. Gibson. Both these chapters are illustrated by diagrams most useful in conveying a clear appreciation of the dynamic principles involved in the diagnosis and treatment of heart disease. The influence of the atrioventricular bundle in relation to cardiac insufficiency, the studies of Albrecht, and of Aschoff and Tawara, on the cardiac muscle and the relation of these investigations to myocardial inadequacy, are given in detail.

The following chapter, dealing with Diseases of the Valves of the Heart, is the joint production of the senior editor and the writer of the preceding chapter. The general etiology and morbid anatomy are first reviewed, followed by a discussion of the insufficiency of the different valves. Those who think, write, and speak dogmatically as to the location and character of cardiac murmurs; and who have not

followed their cases to autopsy, would do well to carefully review the paragraphs dealing with these subjects, so important in diagnosis. Especially praiseworthy are the chapters on the Prophylaxis of Valve Disease. In addition to the dangers resulting from adenoids, attention is called to overexertion in youth, and especially overtraining common in schools for boys. How many surgeons and syphilographers think of the future cardiac lesions prone to occur in their patients? and rarely is the syphilitic advised of these dangers. Now that we appear to be on the verge of a national hysteria concerning the prophylaxis of venereal disease, it were well for clinicians dealing with this class of cases to ease their consciences of future possibilities by calling the attention of their patients to the great susceptibility to arteriosclerosis, aneurism, and chronic valvular disease. The Nauheim treatment is spoken of as a "vogue;" it is not regarded as a cure for all classes of cases, but is conservatively praised in chronic myocardial disease, fat patients with weak hearts, and in those cases of valvular disease in which there is slight compensatory disturbance. In the treatment of cardiac insufficiency, digitalis receives merited consideration.

Hoover's article on Functional Diseases of the Heart includes consideration of tachycardia, bradycardia, arrhythmia, angina pectoris, pseudoangina, and Stokes-Adams's syndrome. The influences of digestive disturbances on the heart, and the paragraphs on irritable and weakened heart, are of unusual interest.

Maude Abbott has written an accurate, interesting, clear, and comprehensive bibliographic article, embracing over one hundred pages, on Congenital Cardiac Disease.

The chapters on Diseases of the Arteries, including Aneurism, are by Osler, and are treated in his customary clear, incisive manner.

After the appearance of Welch's classical article on Thrombosis and Embolism in Allbutt's System of Medicine, Blumer must needs find the pace difficult; his contribution, however, is an excellent one, and that on Phlebitis especially praiseworthy.

Warthin gives a concise and clearly written account of Diseases of the Lymphatic Vessels, including also affections of the Chyle Vessels.

Part II of the volume, devoted to Diseases of the Blood, is by Cabot, whose position as an authority on the subject is recognized. The author very properly calls a halt on the prevailing tendency to coin new names for aberrances in clinical and pathological conditions themselves indifferently understood; he evidently has little use for the term leukanemia. He recognizes a pernicious anemia due to excessive peripheral hemolysis; an aplastic anemia in which there is no marrow response; and the myelophthisic anemia, due to failure of the erythroblastic tissue. A personal experience and a familiarity with the literature, which enable the writer to analyze 1200 cases of pernicious anemia, place him in position to speak with authority. In this affection he opposes transfusion, and doubts whether any drug, even arsenic, exerts any considerable influence over the disease.

Pratt's article on Purpura is a scientific presentation of existing knowledge of the subject. Of the numerous remedies suggested for hemophilia no mention is made of thyroid extract, which has been found of value in some cases.

Lyon writes the chapter on Diseases of the Spleen. The article on Diseases of the Thymus is by Warthin, who also concludes the volume with a chapter on Diseases of the Lymphatic Glands.

W. M. L. C.

GREEN'S ENCYCLOPEDIA AND DICTIONARY OF MEDICINE AND SURGERY. Volume VIII. William Green & Sons, Edinburgh and London, 1908.

The eighth volume of Green's Encyclopedia, the previous volumes of which we have noticed from time to time as they have appeared, extends from "Physiology of Nutrition" to "Rhinolalia." It contains a number of articles which are exceedingly valuable. There is no theme more difficult to discuss than our present knowledge of the physiology of nutrition, yet this is well done in an article of nearly one hundred pages. There is also a good article upon the Pituitary Body, an excellent one upon

Plague and Diseases of the Pleura, medical and surgical, which is followed by an equally good one upon Pneumonia, embracing a vast amount of information in regard to this disease. After that there is another exhaustive article upon Post-mortem Methods and one upon the Physiology and Pathology of Pregnancy, including its complications. This article covers about eighty pages. Other important articles are upon the Physiology and Pathology of the Puerperium. After this there is quite an exhaustive article upon the Pulse, covering some fifty pages, and copiously illustrated with all manner of tracings taken of the more important forms of apparatus for studying the circulation. Still other articles of importance are those upon the Pupil, upon Purpura, Diseases of the Rectum, and Diseases of the Retina and Optic Nerve. Finally, Acute Rheumatism and Rheumatoid Arthritis are discussed in important articles at the close of the volume, which is, by reason of the nature of the subjects of which it treats, perhaps the most important of the series.

URIC ACID AS A FACTOR IN THE CAUSATION OF DISEASE. By Alexander Haig, M.A., M.D., F.R.C.P. Seventh Edition. P. Blakiston's Son & Company, Philadelphia, 1908. Price \$4.00.

With each subsequent edition this book, which is so well known to a very large number of the profession, has grown in size until at present it covers nearly 1000 pages. As is well known, Dr. Haig is a most enthusiastic advocate of the idea that uric acid is responsible for an extraordinary number of the ills to which man is subject, and he has the skill of writing in such a way that he carries conviction to many readers who do not study his propositions by careful analytical methods. Therefore he who does not read carefully will no doubt be convinced that Dr. Haig is correct in many of his conclusions. On the other hand, a very large number of other workers, in clinical medicine and in the study of metabolic changes in the body, have shown that Dr. Haig is in error in attributing to uric acid the power to produce many ailments which he thinks it possesses, and there are certain hypothetical propositions upon which he

builds many of his conclusions which we do not think stand analysis or are justified by the results which have been obtained by himself or others.

As with many books which go through a number of editions, this one now contains a considerable amount of material which might very readily be expunged. In other words, the text could be very materially condensed with advantage.

As an illustration of what we mean as to the method of argument followed by the author we may refer to the chapter on Treatment, page 793, where he expresses the belief that guarana probably does good in the cure of sick-headache, which he also calls "uric acid headache," by reason of its nitrogenous or xanthin elements, because he asserts that the dose of uric acid itself will cure a uric acid headache. This conclusion is a pure hypothesis with, so far as we know, nothing whatever to support it; but it is only fair to add that Haig condemns this use of guarana on the ground that it ultimately does a great deal of harm in that while it clears the blood it stores up in the body a large amount of uric acid which in the end does much damage.

INTERNATIONAL CLINICS. A Quarterly of Illustrated Lectures and Specially Prepared Articles. Edited by W. T. Longcope, M.D. J. B. Lippincott Co., Philadelphia, 1908.

Volume II of the eighteenth series of International Clinics opens with five articles upon treatment. The first of these is one upon the treatment of scarlet fever, including prophylactic measures necessary to prevent complications, by Dr. Fischer of New York. This is followed by one prepared by Hallopeau of Paris upon the treatment of syphilis by atoxyl, and one by Turton of England upon treatment by bacterial vaccination. Then follows one upon the serum treatment of bacillary dysentery, and another by Dr. Deaderick of this country upon the treatment of hemoglobinuric fever. In the department of medicine there is an interesting article upon some curiosities of lead poisoning and one upon valvular heart disease; while perhaps the most interesting of the surgical articles is one upon the reconstructive surgery of the face, by Dr. John

B. Roberts of Philadelphia. The volume also contains lectures or articles in the field of gynecology, ophthalmology, dermatology, orthopedics, pediatrics, and pathology.

CLINICAL METHODS. A GUIDE TO THE PRACTICAL STUDY OF MEDICINE. By Robert Hutchison, M.D., F.R.C.P., and Harry Rainey, M.D., F.R.C.P. Fourth Edition, Thoroughly Revised. Cassell & Company, Limited, New York and London, 1908. Price 10s. 6d.

In the latter part of 1905 we noticed in terms of praise an earlier edition of this excellent little manual, which, although it contains over 600 pages, is quite small enough to go in the ordinary coat pocket. The present edition has been prepared because of the rapid advances which have been made in methods of clinical investigation, with particular reference to chapters on the Alimentary System, the Blood, the Urine, the Nervous System, and Clinical Bacteriology. A number of interesting and excellent bacteriological and other plates are included, and careful exclusion of unnecessary material has enabled the authors to keep the book within the bounds originally laid down for it.

Taking it altogether it is perhaps the most satisfactory handbook of clinical diagnosis which we know of, although of course it cannot be as exhaustive as some of the larger works upon this subject. Nevertheless it is quite marvelous how much material has been included in its pages, even the eye and the ear being briefly considered. The book can be most cordially recommended to both students and practitioners.

A HANDBOOK OF MEDICINE AND THERAPEUTICS. By Alexander Wheeler, L.R.C.P., and William R. Jack, M.D. William Wood & Company, New York, 1908. Price \$2.50. Third Edition.

The present edition of this book has been revised by Dr. Jack, who states that the success of two previous editions has stimulated him to endeavor to maintain its popularity. It covers just 500 pages, and is far too small to be either a text-book of the Practice of Medicine or a text-book of Therapeutics. It is rather a small handbook, a little larger than the ordinary quiz-compend, and students may read it who are desirous of studying these two subjects in a very superficial manner. The book is ar-

ranged as are most books upon the practice of medicine, and as it endeavors to cover all the diseases ordinarily discussed in such large works, it is easy to understand that the various articles must be exceedingly brief, and in many cases a degree of dogmatism is manifested which nothing but the size of the book justifies. The space allotted to therapeutics is proportionately not larger than that found in most books of the practice of medicine of this size.

INSOMNIA AND NERVE STRAIN. By Henry S. Upson, M.D. G. P. Putnam & Sons, New York, 1908. Price \$1.50.

We fail to see any particular reason for the existence of this little book save for the purpose of presenting to the profession, and perhaps to the laity, the views of its author and the fact that he is interested in diseases of the nervous system. After an introduction he deals with some illustrative cases, with Sleep and Fatigue, the Emotions, and later on takes up Convulsive Seizures and Choreic Spasm, "Vascular Potential" and "Cell Potential Evolution." In an appendix he has something to say upon the relation of dental lesions to disorders of the mind and gives the technique of dental skiagraphy. It will be seen therefore that he wanders somewhat far afield from the title which the cover of the book bears. He deals with such hypothetical conditions as "the motility of the glia in hysteria," and states that an unusual length and motility of these cells are supposed to explain the susceptibility of hysterical people to psychic and physical shocks.

PHYSICAL SIGNS OF DISEASES OF THE THORAX AND ABDOMEN. By James E. H. Sawyer, M.A., M.D., M.R.C.P. William Wood & Company, New York, 1908. Price \$2.00.

This American edition of a small English work covers the ground described in its title. As the book contains only 180 pages it can readily be seen that it is quite impossible for it to discuss thoroughly, or even with fair completeness, the various points which are found in most of the ordinary books on physical diagnosis. We fail to see that it has any particular reason for its existence, and there is nothing original about its contents.

CORRESPONDENCE.

LONDON LETTER.

BY GEO. F. STILL, M.A., M.D.

It takes a good deal to stir up the medical profession in this country to look after themselves. Flagrant abuses there have been and are, but the abuse has not yet arisen which can induce the medical men of Great Britain to protect themselves by such a simple method as united action. Within the last few days, however, the patience of our long-suffering profession has been pretty nearly exhausted by the aggressive conduct of the coroner for Southwest London. This gentleman has for some years past been in collision with the medical men of London; he has chosen in cases of inquest to ignore the medical man who had been in attendance during life, and to accept the post-mortem observations of a pathologist who knew nothing by personal observation of the clinical history of the particular case. To such a pitch has the indignation of the medical profession risen that they have already made application, in vain, to the Lord Chancellor to restrain such practices, which, it is said, have already given rise to miscarriage of justice in some cases. The same coroner has now originated a new practice, and one which may have serious results, namely, to hold an inquest upon patients who have died just after a surgical operation; and as if to inaugurate this new departure the first surgeon to be attacked in this way is Sir Victor Horsley, who had occasion recently to trephine a patient for an intracranial tumor which was causing much pain. The coroner, Mr. Troutbeck, said that whenever death was accelerated by operation an inquest should be held, as such a death could not be said to be a natural death. He stated that on inquiry he learned that at the Bolingbroke Hospital alone fourteen such deaths had occurred this year, and that during the same time there had been thirty other operations in connection with the last illness. Whether or not these operations accelerated death

could not be ascertained, but he considered that a very serious state of things stood revealed, and he did not intend to let the matter drop; as coroner he should inquire into these cases on behalf of the public. Sir Victor Horsley, who was obliged to attend as a witness, was an excellent person to select for this attack—indeed, the profession could hardly have desired a better representative, for Sir Victor is preëminently a fighting man, and one whose word will carry great weight both with the profession and with the public. The result of the coroner's action has been a series of letters in the *Times* which have shown that there is no legal justification for an inquest under such circumstances, and which have also pointed out that the public will suffer not only in pocket—for inquests cost money—but also in other ways, for the surgeon will be loath to undertake any serious operation which may result in his having to appear in the coroner's court, and the patient will have the disquieting thought that in the event of death following the operation a post-mortem examination at the public mortuary and a subsequent public inquiry will be held. No doubt vigorous measures will be taken by the British Medical Association or some such body, but in the meantime the surgeon in Southwest London will have to tolerate "the law's delays, the insolence of office."

This month many London physicians journeyed north to the meeting of the "Association of Physicians of Great Britain and Ireland," which has just been held at Edinburgh. This society, which came into existence last year, has its membership restricted to physicians on the staff of a teaching hospital. It is to meet next year in Dublin. Many interesting cases were shown at the Royal Infirmary, and at the Royal Hospital for Sick Children, in addition to those reported at the meetings. Professor Osler contributed some observations on "Chronic Infective Endocarditis," Sir Thomas Fraser spoke of "Pernicious Anæmia," Dr. Byrom Bramwell reported cases of

infantilism. Edinburgh is never lacking in hospitality, and the members of the association found no lack of kindly welcome.

Mumps has been prevalent in London during the past few weeks; and on one of the naval training ships at Portsmouth an extensive epidemic of this disease is in progress, so that almost the whole crew have been attacked.

The Regius Professorship of the Practice of Medicine in Glasgow University, which was rendered vacant recently by the death of Sir Thomas McCall Anderson, has been filled by the appointment of Dr. Samson Gemmell, who was Professor of Clinical Medicine. At Edinburgh the Regius Professorship of Clinical Surgery, which was held by the late Professor Annandale, has been bestowed upon Mr. F. M. Caird, Surgeon to the Royal Infirmary and Lecturer on Surgery in the Edinburgh Medical School.

The annual dinner in connection with King's College, London, took place this month with Lord Milner in the chair, and a large number of distinguished men were present who owed part of their education to King's College. Lord Milner himself studied at King's College, and spoke appreciatively of its position as a great teaching center for London.

An instructive meeting of the British Dairy Farmers' Association has just taken place, which if it should not minister to the self-complacency of the British medical man, at any rate should teach him his own ignorance. One gentleman stated that medical officers of health knew "no more of milk than a sucking-pigeon," and was immensely tickled at the absurdity of some medical man's proposal that every cow should be groomed before milking time. Presumably this rustic authority regards the dung and filth which falls off the flanks of the un-groomed cow into the milk pail as a normal ingredient of milk. One speaker stated that there was no such thing as transmission of bovine tuberculosis to children in this country; another said that he did not believe that tuberculosis in cattle had anything to do with the tuberculosis from which human

beings suffered. It seems a pity that such statements made by persons who have no knowledge of the facts of human pathology should go uncontradicted, especially as the government is on the verge of producing a new bill to govern our milk supply.

A marble bust of the late Mr. George Herring, who bestowed such magnificent sums upon the Metropolitan Hospital Sunday Fund during his life, has been unveiled at the Mansion House. He gave about ten thousand pounds every year to the fund during the last eight years of his life, and at his death bequeathed about seven hundred thousand pounds to it. Mr. Sidney Holland, who is so well known in connection with the London Hospital, presented the bust as one of the executors of the late Mr. Herring.

There is to be a great garden fête next month at the Royal Botanical Gardens in aid of the Charing Cross Hospital; the fête is to be opened by the Princess Louise. Next week Sir William Whitla, whose Dictionary of Treatment has been a welcome friend to many a medical man, and has even been translated into Chinese, is to deliver the Cavendish Lecture of the West London Medico-Chirurgical Society at the Kensington Town Hall: his subject is the etiology of phthisis.

Sir Samuel Wilks, who not long ago underwent an operation for appendicitis, has recently undergone another serious operation successfully at the age of eighty-four years; but even the wonderful vigor of the great physician-pathologist has been surpassed by two members of our profession who have just passed away: Dr. Prior Purvis, who practiced at Blackheath in London for many years, has just died at the age of ninety-six years, about ten years after the establishment of the Purvis Oration as an annual function at the West Kent Medico-Chirurgical Society to commemorate his long service in the field of medicine; at exactly the same age Surgeon-General Andrew Maclean, the father of the Kaïd Sir Harry Maclean whose name has been so much before the public lately, has recently died.

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ORIGINAL COMMUNICATIONS.

PSYCHOTHERAPY.

BY A. L. BENEDICT, A.M., M.D., BUFFALO, NEW YORK.

There is a somewhat prevalent impression that psychotherapy is a modern development. As a matter of fact, only the name and certain details of conception and practice are new. Not to mention various manifestations of mysticism and mental control employed in ancient and medieval times, the various modern charlatans and extra-professional sects that have exploited faith cure, Christian science, etc., and the time-honored but rather informal and quiet appeal to the patient's imagination by placebos, promise of cure, as well as the enlistment of the patient's coöperation by moral suasion, it should be remembered that essentially the same thing as psychotherapy was very thoroughly and frankly studied by the profession, in a perfectly scientific spirit, a score of years ago, under the title of hypnotism.

Psychotherapy may assume a variety of forms. First of all, there may be a very pointed and more or less violent assertion that there is nothing ailing the patient, or if the symptoms assume a moral direction, the application or threat of a penalty. There is no very great difference between a child that swallows peach pits or screams and kicks to get more peaches and a grown woman who has unilateral anesthesia because she is not in the spot-light of family attention, or a clergyman who has aphonia which requires a vacation and the prayers of the congregation to cure him. If we could word our diagnosis to the adult patients as candidly as to the child, could control them with so established authority,

and could punctuate our psychotherapy with the same kind of physical stimuli to assist the memory and to enlist autosuggestion, our treatment would be much more efficacious. In plain words, a great many hysteric, neurasthenic, and morbid patients need a good whaling, or at least a tongue lashing.

More available, and perhaps really better for both child and adult, is an equally candid explanation of the psychic nature of their ailment, but without either physical or oral violence. Indeed, many hysteric patients are unaware of their own naughtiness, and they are victims of self-deception. We must not forget that such emotions as jealousy, craving for affection, and such expressions of emotion as laughter, tears, gesticulation, and profanity, are the initial steps toward hysteria and even overthrow of mental balance. We are all potentially hysteric, even potentially insane.

Various other grades of psychotherapy are encountered. General hygienic and dietetic regulation, with encouragement, with or without the employment of placebos in the strict sense, frequently relieves essentially psychic ailments without there being made, at any time, a frank disclosure of the actual condition. Prayer, or more or less mysterious influence, by lay practitioners of some form of psychotherapy, may also produce equally good results.

The extreme grade of psychotherapy consists in suggestion under hypnotism. The hypnotic state acts merely to render the patient's mind especially receptive, and on

account of the general ethical objection to making one person the slave of another, the best authorities are practically agreed that hypnotism should be practiced only exceptionally. Suggestion without hypnotism, but with the patient's mind rendered receptive by confidence in the suggestor and by realization of the need of influence, is now frequently and advantageously substituted for out-and-out hypnotism.

Without entering into a discussion of the many interesting problems as to the nature and applicability of hypnotism and suggestion, it is important to recognize that it is the best type of psychotherapy aimed at relief of symptoms without giving the patient an understanding of the essential nature of the condition, while at the other extreme is the frankly brutal statement to the patient that he or she has no real trouble except a more or less patent cussedness. The former ignores etiology and aims at ultimate results, the latter brings the cause into prominence and leaves it to the patient's moral and mental effort to remove it.

In choosing among the different forms and grades of psychotherapy, we must naturally be governed by the urgency of the symptoms and by the ability of the patient to remove the cause. It is obvious that the practice of hypnotic suggestion or any other formal method, by physicians or charlatans, which takes the genuineness of the symptoms for granted does not strike at the root of the disease. The very success of the treatment really aggravates the underlying self-deception, just about as the use of morphine to control the symptoms of uremia may increase the uremic condition. Very likely the patient may be so impressed by the hypnotism that the individual symptom may not return, and if the psychic disturbance is of an acute nature, as by a fever or transient autointoxication or period of excessive strain, there may be no tendency to return of any kind of psychic manifestation. But if the state is a relatively permanent one it is quite likely that the particular symptom or some analogous one will again require psychotherapy. Here again we have a close analogy between the general indica-

tion and contraindication for hypnotic suggestion and for morphine, antipyretics, or other symptom-relieving drugs. On the other hand, mental instability may prevent the application of the frank method of pointing out the ultimate cause, just as physical weakness or other factors may prevent the successful carrying out of the policy of removing the cause in organic diseases.

It requires no argument that essentially imaginary disease is best treated by some form of psychotherapy. Indeed, even if the condition is falsely conceived as genuine and is treated by drugs, electricity, massage, diet, etc., the relief is obviously due to the mental impression and not to the chemic and physical effect of the treatment.

Similarly it requires no argument that a strictly organic disease, as an infection, a neoplasm, or a degeneration, cannot be due to a psychic influence and cannot be cured by psychotherapy. Obviously, the manifestations of any disease may be very largely controlled by psychotherapy or by self-originated mental effort. Whether purely psychic states, independent of physical depression which is so prone to accompany the former, has any influence in the predisposing etiology of organic diseases is in dispute. It does not seem rational that dread or despondency will determine the implantation of a bacterial disease, a cancerous process, or the development of a degeneration, though in the last case an indirect influence on metabolism may be induced. Of course, numerous examples may be cited of the development of an anticipated disease, but so may examples of the contrary, and only a very careful, exhaustive, and critical statistic study should convince us of the possibility of the direct predisposition to organic disease by psychic influence.

There is a large group of intermediate disease manifestations known as functional, but in which the functions involved are such as have no direct connection with psychic life. To what extent these diseases are dependent on psychic states is an important problem, for, if thus produced, it is *a priori* probable that they may be cured by psycho-

therapy; and conversely, if not dependent on psychic states, it is altogether unlikely that psychotherapy will be effective.

Functional diseases of this type involve practically every secreting gland, even those having internal secretions, as well as practically every "involuntary" muscular organ. Disturbances of thyroid, gastric, and pancreatic function, diabetes especially, have recently been pretty directly connected with structural changes, and it is doubtful whether the old conception of a functional disease can stand, even in the sense of the existence of a lesion so recondit as to escape ordinary careful histologic examination. Still, it is conceivable that there may be diseases which are functional in the strict sense of an excessive, deficient, or perverted flow of nervous energy, without lesion of the terminal secreting cell or muscular fiber. Whether the disturbance of innervation is itself ultimately functional or due to centric lesion, is another question that need not be discussed here.

Even if all the conditions that, for the present, are classified as functional are due to lesions, not only real but fairly easily detected by histologic examination, they are still amenable in some degree to treatment serving to regulate the flow of nervous energy, just as increased head of water may compensate for a leaky hose or as additional electric voltage may compensate for poor conductivity and insulation.

Hyper- and hypochlorhydria, hyper- and hypothyroidism, diabetes, constipation, diarrhea, and various atonic and spastic and hyperkinetic states are connected with and even, as far as we can judge, pretty definitely caused by psychic disorders. The pathophysiology of fear is very closely analogous to that of hyperthyroidism and nervous shock, even if it does not actually produce fulminant diabetes, and is certainly a marked cause of an exacerbation leading to its initial conspicuous manifestation. Asthma, erythema, and various other conditions connected with pathologic alterations in the tonicity of smooth muscle, cardiac rapidity and force, and secondarily alterations of renal function, are plainly due to emotional causes. The control of the blad-

der, rectum, and of the sexual apparatus is so conspicuously dependent upon psychic states as to be recognized by the laity, and even to have led to various homely figures of speech.

In the light of these facts it seems very plausible that various diseases commonly termed functional may be relieved if not actually cured by suggestion—indeed, we may even claim that theoretically they may be cured just as thoroughly by psychotherapy as by diet, medication, electricity, etc. However, we must recognize the fact that there is a much less intimate association of psychic state with hyperchlorhydria, constipation, etc., than with a tic, or aerophagia, or blushing. Moreover, it may well be questioned whether it will suffice merely to suggest to the patient that his disease is a neurosis, and that it will be cured, when there is no direct connection with self-control or psychic state in the ordinary sense. It seems logical to assume that we must first ascertain how the psychic state reacts upon exercise, appetite, sleep, blood-pressure, etc., and then direct our psychotherapy, not at the ultimate disease, but at the bodily habits and reflexes upon which it depends. Still, a very general conviction on the part of the patient that he will recover may help to some degree. When we have at our command well-tested therapeutic measures along other lines, it would be foolish to neglect them.

Some general considerations as to psychotherapy may not be out of place. First of all, however rationally we may try to explain it, any kind of acknowledged psychotherapy will be regarded by the laity as a form of mysticism and as the proper domain of mystics and charlatans, not of the medical profession. Thus, its use must be cautious and, so far as possible, in conjunction with other means of treatment.

There seems to be no question but that some of the advocates of psychotherapy have been carried away by its apparent novelty and by their enthusiasm. We must understand thoroughly that it can apply only as an auxiliary to any real, organic disease, and, for the present at least, only as a minor part of our armamentarium

against so-called functional disturbances not obviously and directly connected with emotions.

Psychotherapy is a very dangerous weapon in the hands of any one but a conscientious, hard-headed, well-trained physician. The Emmanuel Church movement seems to the writer especially dangerous because of the eminent respectability and intelligence in non-medical matters of its advocates. We may even regard it as a substitute for Christian science. Its dangers are twofold: first, its practitioners, the clergy and perhaps the lay members—lay in both an ecclesiastic and medical sense—openly declare their intention to practice hypnotism in suitable cases. Hypnotism should never be practiced except by an experienced physician, and then only in exceptionally favorable cases. The individual who has been hypnotized has lost just so much of his independent mental life. He is liable to yield to other hypnotists, more or less amateur, and every séance increases his susceptibility. It is a serious matter to allow influence to supplant conscious intelligence, and it is no imaginary fear that seduction, crime, and undue control may follow. We need not discuss whether the hypnotizer exercises a special, extrinsic influence over the subject, or whether all hypnotic suggestion is intrinsic in the strict scientific sense. Practically, some persons can hypnotize better than others, and the victim is virtually under the control of another will.

Secondly, psychotherapy, especially when practiced by an enthusiast, whether a physician or not, is bound to be applied to cases in which an organic disease is overlooked. While this criticism applies with especial force to charlatans, devotees of pseudoreligious cults, and to non-medical philanthropists, it applies also to physicians, and especially to those who, as in the Emmanuel Church movement, essay to examine patients in advance and exclude organic disease.

In plain words, this means that even a competent physician cannot unerringly exclude organic disease, at least not at one or a few examinations. This sounds discourteous, especially in view of the eminence of

some of the physicians connected with this movement both in its home city and in other places. But it is obviously impossible to apply to the clientele of such a method even the moderately rigorous methods of a life-insurance examiner. Even if the temperature is normal, there is no certainty that it is not elevated at other times; even if the urine is examined and found normal by the usual tests, nephritis and various metabolic states are not certainly excluded. It may be questioned whether such patients can be examined by experts in various lines, and whether any one man nowadays can be considered competent in the various lines of practice, expert knowledge of which would be necessary to exclude organic disease.

Organic diseases are notoriously prone to manifest themselves at first by psychic symptoms, or at least "neuroses" not of a hysteric nature in the frank sense. Not to go outside my own specialty, I may cite two cases of esophageal spasm, actually so demonstrated and relieved, but which proved to be reflexes from an incipient cancer of the cardia. In two other personal cases jaundice, undoubtedly largely spastic, was the expression of the irritation of an inflammation of the appendix requiring operation. One of the advocates of psychotherapy, in making broad claims for the curability of constipation by this method, made the naive statement that one of the cured cases, some months afterward, was found to have an inoperable cancer of the rectum. Would it not have been better to have examined and treated such a case on old-fashioned—not, of course, purely symptomatic—lines? Some of the bizarre manifestations of insanity have, it is reported, already been discovered in the clientele of the Emmanuel Church movement, and while we may not positively claim that such cases are organic or that they could be cured by other methods, it is at least possible that serious danger to their associates may develop from their remaining at large.

Indeed, it is worthy of a special paragraph to point out that the very class of cases to which religious influence and lay psychotherapy is best adapted lie dangerously close to the border-line of insanity,

and in any large series of such cases it seems probable that the most insidious forms of insanity and those connected with sexual and criminal tendencies will occur with frequency enough to make one shudder at the possibilities.

Looking at the matter from the ethical standpoint, it seems proper to question

whether the comforting and jollyng out of symptomatic expressions of a psychosis is what hysteric patients need at the hands of the Church. Do they not need, on the contrary, a pretty vigorous and severe inculcation of principles of right and wrong as applied to selfishness, idleness, egoism, and what is vulgarly known as "belly-aching"?

THE STATUS OF THE OPHTHALMO-REACTION TO TUBERCULIN.

BY LEIGHTON F. APPLEMAN, M.D.,

Ophthalmologist to the Frederick Douglass Memorial Hospital; Demonstrator of Pharmacy and Materia Medica, Jefferson Medical College, Philadelphia.

The attention of the profession was drawn to the use of tuberculin in the conjunctival cul-de-sac for the diagnosis of tuberculosis by Calmette¹ in June, 1907. He recommends the use of a one-per-cent aqueous solution of dry tuberculin which has been precipitated by 95-per-cent alcohol. This solution should be free from glycerin and sterilized by moist heat, not exceeding 105° C. (221° F.), or it may be made by dissolving 0.005 gramme (about 1/12 grain) of dry, precipitated tuberculin in 10 minims of warm boiled water. One drop of this solution should be dropped into the inner angle of one eye, care being taken that the patient does not expel it by involuntary, forcible contraction of the lids. In order to prevent this, the lids should be held apart for a few minutes after the instillation. The patient should not be allowed to rub the eye after the instillation; if he persists in doing this, an aseptic dressing should be placed over the eye.

In from three to five hours after the instillation there occurs, if the patient is tuberculous, more or less edema and redness of the conjunctiva; the caruncle becomes swollen and covered by a thin, fibrinous exudate. Later the vascular injection deepens, lacrimation becomes profuse, the fibrinous exudate becomes more abundant and collects in shreds and filaments in the lower cul-de-sac. There is usually but slight inconvenience, due to smarting as of a foreign body, and blurring of the vision by the exudate. The temperature of the patient is not changed. The maximum reaction is reached in from six to ten hours, and it usually diminishes and disappears in from

twenty-four to forty-eight hours, the sound eye being used as a guide to the intensity of the reaction. The reaction may begin later, and end later, than above stated. There appears to be no relation between the intensity of the reaction and the gravity of the lesion. Lesions are not any better or worse after the reaction.

In health only slight redness of the conjunctiva occurs, which lasts for five or six hours. No injection of the caruncle or fibrinous exudate follows its use.

The reaction may fail if the patient is moribund.

In his first series he reported 25 cases, 16 being tuberculous in whom the test resulted positively; 9 were not tuberculous and gave no reaction. His second series consisted of 115 cases, in which 63 were tuberculous and all gave a positive reaction; 52 non-tuberculous cases gave a negative reaction.

Following Calmette's paper a great number of investigations were carried on, especially by French and German clinicians, to determine the value of this procedure. The results were in the main favorable, although some serious consequences have been recorded, especially in those cases in which it was used in the presence of evidences of old inflammation of the eyeball.

Calmette, Letulle,² Bazy,³ Zaniboni,⁴ Levy,⁵ Comby,⁶ and others consider it of great value and not followed by complications as a rule.

Kleineberger⁷ and R. Dufour⁸ call attention to a condition of hypersensitiveness of the eye to the tuberculin after the first instillation. Henri Dufour,⁹ Mery,¹⁰ and

Griffin¹¹ consider the second or more instillations in the same eye as possible causes of error, although Comby believes that these differences are due to errors in technique. Bonnet and Berard¹² conclude that (1) when the first reaction is positive tuberculosis is probable, if it is negative it does not prove that the patient is not tuberculous; (2) when the reaction is negative twice it is very probable that the patient is not tuberculous; (3) if the reaction is negative at first and positive at the second instillation, a firm conclusion cannot be drawn on account of the hypersensitiveness which is established by the first instillation.

On the other hand, some German investigators, namely, Eppstein,¹³ Schenck and Seiffert,¹⁴ Bluemel and Clarus,¹⁵ have recommended successive instillations in order to obtain greater precision in diagnosis.

Mainini¹⁶ does not consider the reaction as absolutely specific. In his experience the cutaneous reaction was positive six times more frequently than the ocular in patients merely suspected of having tuberculosis.

Serafini¹⁷ states that it is not conclusive in cases of tuberculosis of bones or joints in which he has used it, and is followed in some cases by marked reaction.

Serious results are reported by La Personne,¹⁸ Wiens and Günther¹⁹ in those cases in which the test was applied in the presence of mild conjunctivitis, or in those cases in which there was previous inflammation of the cornea or globe of the eye. Feer²⁰ warns against using it in scrofulous children, as it may set up a rebellious conjunctivitis.

It is generally conceded that the test loses its efficiency in patients profoundly cachectic or moribund. Bourget²¹ believes that it is of value only when supported by other clinical symptoms.

Comby⁶ in a series of 300 children, and Audeoud²⁴ in a series of 31 children, have used this test with a solution of 0.5-per-cent strength. This generally gives a reaction of moderate intensity, although it is sometimes very slight, and unless the observer is careful in his examination he may report it negative when it is in reality positive. In their experience the one-per-cent solution

gave a reaction which was too intense in this class of cases. Comby recognizes three sources of error in making the diagnosis: (1) The feebleness of the reaction; (2) late appearance of the reaction, in some cases not for forty-eight hours; (3) errors in technique. If these are guarded against, he believes that the test is absolutely accurate and trustworthy, and may be repeated indefinitely in the same patient without modification of the result. He has obtained the reaction in well-nourished patients as well as in those who are cachectic or moribund. In all his 300 cases he has not had a single one of obstinate ophthalmia. It must be determined beforehand, however, that the eyes are in no way impaired by previous disease.

The reports of the use of the ophthalmoreaction in this country and in England have been meager in comparison to those of the French and German. Smithies and Walker²² report a series of 242 cases of both tuberculous and non-tuberculous patients, and give a review of the literature on the subject. Hutchings²³ also reports a number of cases in which he has used it. Webster and Kilpatrick²⁵ report 121 cases, of which 43 clinically tuberculous gave a positive reaction; 58 doubtful cases showed 36 positive, 18 negative, and 4 doubtful reaction; 16 doubtful cases with a suggestive history showed 6 positive, 7 negative, and 3 doubtful; of 4 healthy individuals, 2 gave a doubtful reaction and 2 negative. Baldwin²⁶ in a very interesting paper reports the results of its use by himself and his colleagues in 137 cases. In 45 of these, suffering from pulmonary tuberculosis, 42 reacted positively, 1 doubtful, and 2 negative; of 35 cases in which tuberculosis was either suspected or in which old lesions had healed there were 16 positive, 5 doubtful, and 14 negative; in 57 apparently healthy persons, a positive reaction was obtained in 16, doubtful in 1, and negative in 40. A moderate positive reaction was obtained in 12 out of 22 tuberculous patients examined by Downes.²⁵

At the present time the one-per-cent solution of dry tuberculin as recommended by Calmette is usually employed in adults, and

the 0.5-per-cent solution in children. Small disks containing 0.003 gramme of tuberculin are obtainable, which when dissolved in 5 minims of sterile water make a one-per-cent solution.

As has already been pointed out, much may depend upon the difference in technique of different observers. The extreme reactions reported are as a rule the result of using the test in eyes previously diseased or in which mild conjunctivitis existed at the time of making the test.

In concluding, it may be stated that the results of investigations as to the value of the ophthlmo-reaction are not yet considered final, although they are in the main favorable. In this country the difficulty in securing uniform results is in part due to the failure as yet to obtain a tuberculin which may be considered of standard, uniform strength, and until this has been done there must of necessity be more or less variability in the conclusions of various observers.

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308 SOUTH SIXTEENTH STREET.

REPORT OF TWELVE CASES OF PERTUSSIS TREATED WITH THE ABDOMINAL BINDER.

BY PAUL B. CASSIDY, M.D.

During the past few months I have treated several cases of pertussis, and having seen Dr. T. W. Kehun's report in the *Journal of the American Medical Association* of November 23, 1907, of good results obtained from the abdominal binder, I decided to try it.

The large percentage of complications in pertussis and its high mortality make any new method of treatment worthy of consideration, especially when we take into account the number of drugs (with their usual depressing heart action) which have been tried with uniformly poor results.

Dr. Kehun collected over five hundred cases that were treated with the binder, and of these over 87 per cent showed a marked improvement in the check in vomiting and in the gain in weight. In the one hundred and twenty-five cases in which complications developed, the complication was usually present when the binder was put on.

The complications are usually bronchitis, bronchopneumonia, and hernia. My series of cases did not have hernia.

In his report Dr. Kehun has given an excellent description with several illustrations of the method of application of the binder, and I believe with him that the success of the treatment depends on the making and mode of applying the binder. From my experience with the binder I believe it to be of very great help in pertussis in shortening the length of time of the disease, checking the vomiting, and reducing the number and severity of the attacks. I believe that the earlier the binder is applied the better, and in infants especially the results are wonderful.

The following cases were reported at the May meeting of the Philadelphia Pediatric Society:

Case 1.—Katharine B., aged seven weeks; breast-fed. Child first seen December 25,

1907; had a cough five days; had been vomiting three days. Seen evening of the 25th; diagnosis of pertussis. Mother improvised binder and gave mixture of bromide and antipyrin. Following day was able to get good binder, and on second day stopped medicine and used only binder. On the fourth day (the 29th) vomited only once and attack was mild. By the eighth day vomiting had stopped; very slight cough, and baby had increased in weight. Baby was discharged January 10, 1908, cured. Duration eighteen days.

Case 2.—John B., aged three years. This child had pertussis for three weeks when I was called to see Case 1. Attacks rather severe and vomited most of his food. Had mother make binder for the child, and by third day vomiting had stopped; the attacks were less frequent and severe. By end of week child was much better. No medication used.

Case 3.—Grace P., aged two months; breast-fed. First seen on January 26, 1908. Child had had severe cold for six days and had been vomiting for two days. Very weak for past twenty-four hours. On examination found many fine râles scattered over chest. Temperature was 103°; respiration 40. Diagnosis: pertussis and bronchopneumonia. Ordered sedative mixture of bromide, etc., and got mother to make binder. On the second day child was retaining food and much improved. Stopped medication. By the fifth day there was no vomiting and the cough had disappeared. Discharged child February 5, 1908, cured.

Case 4.—Bella P., aged five years. This child had had pertussis for the past three or four weeks, and was seen with Case 3. Attacks of coughing were severe; vomiting food frequently, and child was losing weight. Had mother make binder, and in three days child had stopped vomiting and attacks of coughing became less in frequency and severity, and by the end of two weeks the child was completely rid of cough.

Case 5.—Thos. N., aged seven years; Leo N., aged four years; and James N., aged two years. All had pertussis together, and when seen had had the cough from eight to ten days. They had been vomiting their

food for six or seven days. I had the mother make a binder for each of them. In Thomas and James vomiting stopped after first day, and they were rid of cough in less than three weeks. In Leo the vomiting did not stop for three or four days, and he had very severe attacks of coughing, especially at night, but after the second week he was very much improved and was practically well at the end of the fourth week.

Case 6.—Katharine G., aged seven years. This child had had pertussis four weeks when I first saw her. The mother had taken her to the Children's Hospital. The case was diagnosed catarrhal pneumonia and the mother told that the child was too sick to be brought to the clinic. I saw the child the same evening (March 27). Two days later the child developed marked case of measles, which disappeared in five days. During this time the cough was very severe and all food was vomited. On April 1 I had the mother try the binder, and after this application the child vomited only twice, and by the 6th the cough had completely disappeared.

Case 7.—Thomas G., aged eight months; brother of Case 6. When I first saw this child (April 9) he had had pertussis two weeks and had contracted measles. He had very severe, hard cough and frequently vomited his food. He developed croupous pneumonia at the left base posteriorly and at the right apex. The child did very well, and the consolidation gradually cleared, but a very severe spasmodic cough continued that kept the child awake most of the night, and the little patient was in a desperate condition. I had tried several drugs without any results, and I was very much afraid that between the cough, vomiting, and weakness the little fellow would die. The mother asked if we could not try the binder; she made one, and that night the child slept six hours and vomited only once. In three days the cough had stopped; he started to gain in weight, and his improvement was remarkable. I saw him last on the 28th, when he was in very good condition.

Case 8.—Francis T., aged seven. The child had had measles and scarlet fever and was never very strong. First seen on

February 1, when he had been coughing with characteristic whoop for two weeks, and had been vomiting for a week. On examination there was found mucous râles all over the chest, both anteriorly and posteriorly, and on the left side at the base posteriorly he had impaired resonance and bronchial breathing. This child had to be put to bed immediately, he was so very weak. I tried the binder without very much success, although the attacks were not nearly so frequent nor vomiting so severe. The little fellow would beg to have binder replaced on chest whenever it was removed, as he said it gave him so much relief. He was in bed seven weeks, and I discharged him at the end of March, when the lungs were practically clear. He was eating well and gaining in weight.

Case 9.—Helen C., aged eight years, and Mary C., aged six years. These children I saw at the Children's Dispensary at St. Agnes Hospital. They had just moved from Chicago. They had had severe pertussis for over two weeks. The attacks were very severe. The children vomited blood almost every time they had an attack. I had the binder made for both of these children and put them on pertussin. In five days they vomited only occasionally and were getting good rest. At the end of a week I stopped pertussin and used just the binder. By the end of the second week they were retaining their food, and the attacks were much less in frequency and very mild. Although the older child was much worse than the younger, she responded to the treatment much more quickly.

THE TREATMENT OF CHRONIC CONSTIPATION.

BY B. K. ELLIS, M.D., GREELEY, COLORADO.

Chronic constipation is not a disease; it is a relative term and may be an expression of cause or effect, or it may incorporate both in the same case. Strictly speaking, constipation is a symptom of other diseases—a symptom which, when treated, often alleviates the causal factor.

I do not believe, as is largely taught, that some people have a normal movement of the bowels only once in two, three, or more days. It may be that their intestinal tract has become so tolerant to this habitual load of refuse that they experience little or no inconvenience from it. Such anomalies as are cited in the literature of patients going habitually for weeks, months, and years even, without a bowel movement, are too well authenticated to dispute, but they prove nothing except to show how much insult may be added to an otherwise healthy constitution with but a mild reproval on the part of nature.

All other human excretory functions and all animal life emphasize the assertion that diurnal defecation was the original plan for man's fecal habits. Man's intestine was not constructed for a fecal reservoir, but for the finishing of digestion and the assimilation of ingested material, and when these

functions are complete the residue is waste product and its early removal from the body is an obvious physiological result. It is, however, usually not advisable to try to change the habits established by a lifetime of practice. If for years it has been habitual for a patient to empty his bowels every third day, and he suffers little or no inconvenience from the habit, then do not try to teach new habits, as one is liable to fail.

This paper will have to deal only with constipation as the result of the ordinary underlying factors. To consider all the conditions that make for constipation would mean a volume. The constipation resultant upon remote disease, as fevers, except those accompanied by a specific intestinal catarrh, gastric ulcer, tabes, rectocele, phimosis, malformation, hemorrhoids, liver or pancreas disease, hysteria, retroversion of the uterus, pelvic inflammation, profuse perspiration, polyuria, tumor, obesity, prostatic disease, myelitis, tetanus, meningitis and other nervous diseases, anemia, peritonitis, appendicitis, chronic portal congestion from portal or hepatic disease, diseases of the colon, sigmoid and rectum resultant of old inflammations, chronic dysentery, ulcerations, tuberculosis, strictures, foreign bodies, etc..

demands its appropriate treatment in each case and deserves only mention here.

A careful analysis and accurate diagnosis of each causal factor is essential to intelligent treatment of the symptom.

Probably the modern methods of living, the consumption of highly seasoned foods, the close attention to social or financial duties, with their consequent neglect of the calls of nature, are largely the starting-point of chronic constipation.

The adult human defecation reflex is largely dependent on habit for its function.

When a sensory stimulus is habitually answered in a certain way, that reflex act becomes subconscious and is completed without the initiative of the will. But let such a reflex act become habitually inhibited, then such inhibition acts as a narcotic upon the relation of sensation and the resultant motor function of the reflex ganglion; ultimately the sensations are received, and are so dulled that no response is made. The fecal mass descending into the rectum stimulates sensory nerve fibers that, connecting with spinal ganglia, produce certain responses, resulting, if time and place be convenient, in the act of defecation. In infancy this act is purely reflex, but as the will develops these centers are subjected to its domination and are often completely inhibited by it. The constant exercise of this inhibition produces a dulled response to nerve stimulation that ever requires increasingly forceful stimuli to irritate the reflex act. As habitual inhibition destroys the acuteness of sensation, so at last the fecal mass in the rectum means nothing to the nervous mechanism.

Another fundamental law is that a muscle, to perform physiologically its functions, must act against a given load. An intestine filled with ingesta, predigested or of such digestibility that the residue is too small to be grasped by the musculature of the intestine, has two conditions to combat: first, the ingested material is insufficient to produce an initiating stimulus to the nerves presiding over the peristalsis of this part of the bowel; secondly, it supplies too little load for the muscle to grasp, consequently there will be muscle atony.

Muscle atony may also result from the overdilatation of the bowel as a result of too much food containing large quantities of indigestible substances. This latter condition, if it has persisted for a long time, results in dilatation and consequent thinning of the gut wall. It is obvious that the former condition must be combated by food rich in cellulose, which is usually digested only in part, that the bowel may have something tangible in the way of stimulus and load, while in the latter condition it is necessary to reduce the quantity of ingested food and replace indigestible elements by proteids or other easily digested foods.

It has been remarked by Schmitt that in the alvine dejections of chronic constipation the cellulose is abnormally digested and the fluid portions are abnormally removed. Intestinal digestion seems to be increased, and in consequence, the culture media being poor, the intestinal bacteria are reduced markedly in number.

He suggests and has used commercial agar in doses of 30 grains to 2 drachms to combat this condition. Agar takes up large quantities of water, with which it grudgingly parts; it is also in the flaked or broken condition, almost indigestible, thus fulfilling two of the three requirements just mentioned. This preparation must not be used in the powdered form, as it is then readily digestible and its rapid swelling produces an irritation to the intestinal mucosa. To this substance, which appears on the market with the name "reguline," Schmitt adds 8 to 10 drops of fluid extract of cascara as an additional stimulus to the bowel; this he decreases from day to day. The agar can be conveniently given flaked in apple sauce or potato. He claims for this method that it fulfils all requirements and may be continued indefinitely without harm or habit formation, or other deleterious results, that it can gradually be decreased, and that it cures. Schmitt's para-reguline, with which I have had some experience, is based on the fact that the higher paraffins are non-toxic and indigestible. He selects petrolatum liquidum of the U. S. P., giving 3 grammes in capsule with 10-per-cent fluid extract of cascara from one to six times daily. This

answers satisfactorily several requirements: it supplies a grasp for intestinal muscles, supplies sensory stimulus both by its bulk and through the action of the cascara, and it also lubricates the bowel. It has, however, some disadvantages: it requires considerable amounts of a substance that is exceedingly disagreeable to the refined taste, and the cascara content, while being a very good laxative for occasional use, will when used over a long period of time demand an increase in dosage, and it also produces when used indefinitely a catarrhal condition of the bowel as annoying as the constipation.

Roos, basing his work upon the observation of Schmitt that the alvine dejections of the chronic constipate are poor in bacteria, due to the lack of cellulose, their natural food, which he supplies in digestible form by agar, has made some experiments by adding a loopful of pure culture of colon bacillus to each dose of agar. His reports are optimistic. However, in view of the results of recent investigations into the pathogenesis of the colon bacillus, it seems that that method of treatment might be called somewhat heroic.

Steele, Schmitt, and others contend that inasmuch as the feces are low in bacterial content, intestinal autointoxication is a fear more anticipated than realized in chronic constipation. They fail, however, to take cognizance of the fact that these same feces are the product of an abnormally complete digestion, which in itself will produce bodies that are toxic when absorbed.

The so-called dietary treatment consists of giving foods which have a large content of cellulose, as vegetables, oatmeal, etc., and others which contain laxative principles as illustrated by the fruits, except those that contain astringents, as the persimmon, etc.

After having decided on the diet to suit the case and the more or less medicinal adjuvants thereto, it is necessary to instruct the patient that he must reëducate his reflex centers to act *habitually* in response to certain stimuli. To this end he must go to stool at a certain hour each day, sit in the physiological squatting position, and closing the closet door upon business, pipe, and

newspaper, concentrate his mind upon the functions about to be performed; he shall sit there fifteen or twenty minutes, unless the bowels move sooner, and not discouraged by failures must persevere in this habit.

I do not believe with Spivak that the most usual cause of constipation is mental attitude, and that psychotherapy should be given the place paramount in its treatment. It has an undoubted place in cause and treatment, but usually the other factors that have been mentioned dominate the picture and should receive the greatest attention in treatment.

The most opportune time for going to stool is just after breakfast. A glass of cold water before breakfast is a powerful stimulus to peristalsis, as is the morning cold bath.

In connection with atonic constipation it is well to consider the relation of constipation and neurasthenia and other conditions of depression; often the neurasthenia is the cause of constipation, often the constipation augments the neurasthenia, and sometimes its cure relieves entirely the nervous phenomena. In such cases the mandamus, treat the patient, not the disease, is pertinent.

It is necessary ofttimes to bring to bear upon a case any form of treatment that will increase the patient's general health and nervous stability; to that end mechanical stimulation is by far the best method of producing muscular tone and nervous control of the intestine.

A number of methods of applying mechanical stimulation are at one's service: first of which I place exercise, then massage, both rectal and abdominal. Mechanical treatment must be applied with intelligence, or great harm may be done. No abdomen whose owner gives a history of chronic appendicitis, hepatic or renal colic should be massaged, and certainly one must not add mechanical insult to a gut already injured by ulcer or mechanically obstructed.

Contrary to some observers I do not believe vibratory massage is of much use in these cases when applied to the abdomen. It will, however, often stimulate a liver to

increased function, contributing thus that laxative *par excellence*, the bile.

I apply manual massage to the abdomen for from fifteen to twenty minutes, beginning with light circular stroking of the abdomen about the umbilicus, first having lubricated well the parts with olive oil; these strokes are gradually widened and pressure increased until the course of the colon is being massaged deeply, all fecal masses broken up and moved down toward the rectum.

Massage should not be too long continued nor too often repeated lest spasm be produced; every second day is a short enough period to begin with. These periods may soon be drawn out to once or twice a week.

Faradic electricity is a convenient substitute for massage. A large lead electrode is placed over the lumbar or sacral spine and the other placed labile over the abdomen; stroking from right to left. This current should be interrupted from two to six times per second, and the duration of séance and strength of current be dependent upon results and sensations of the patient.

I do not believe that abdominal galvanism is productive of very good results.

Rectal massage may well be produced after the method of Hirschman, who introduces a Wales bougie into the rectum and lower sigmoid, over which is drawn a large condom or small, thin, rubber ice-bag; this is inflated to tolerance, and then rapidly deflated. This vibratory sort of massage is repeated again and again for several minutes, after which the bag is partially deflated and slowly removed, thus dilating the sphincter. This method often achieves very good results.

A method of rectal electrification by means of a galvanized normal salt solution, devised by Murray, has much to recommend it. He introduces into the rectum a cannulized rectal electrode, after the pattern of Ewald, covered with perforated rubber; this he connects to the positive pole; the negative pole is connected with a large flat electrode placed over the abdomen. To the rectal electrode is attached a fountain syringe containing from thirty-two to sixty-

four ounces of normal salt solution. As soon as the slow flow of the normal salt solution is begun, the current of from five to twenty-five milliamperes is turned on for from fifteen to twenty minutes; the patient then goes to the closet and empties the bowel. He then returns to the table, when an ounce of an emulsion composed of olive oil 16 ounces, iodoform 1 drachm, bismuth subnitrate 2 ounces is thrown into the rectum and well up into the sigmoid through a Wales bougie. This in the original treatment is followed by one or two ounces of diluted hydrastis; the latter I prefer to omit. The patient is kept with hips elevated for ten minutes. This treatment is repeated every four days. The desire to go to stool usually comes on from within a few moments to a few hours.

Gant lays stress on the statement that teaching regularity of habit, revision of diet and exercise, copious injections of water, in the beginning of treatment only, and then supervised by the physician, together with massage, electricity, and dilatation of the sphincter when needed, are productive of a cure in most cases of uncomplicated constipation.

I believe that even if forcible dilatation of the sphincter is not done, gradual dilatation by means of Wales bougies should be instituted. Every second or fourth day an increasingly large bougie is introduced into the rectum and left in place for fifteen or twenty minutes; if this fails to produce early regularity, then resort should be had to the method of Hirschman's rectal massage or Murray's galvanomedical treatment. By combination and alternation practically all cases of uncomplicated constipation can be cured.

The medicinal treatment should be very limited: diminishing doses of cascara, and a gradually decreasing pill of strychnine, belladonna, and aloes may be used. Eserine in doses of 1/100 to 1/60 grain has been suggested in these cases. I have used it in but one case, and that when the patient had an idiosyncrasy for atropine, which prohibited the latter's use. It seemed here to have no especially salubrious action. Suit-

able doses of podophyllin may be conveniently added. The use of frequently repeated copious draughts of pure water must be insisted on for obvious reasons.

The use of sour milk is by some highly spoken of in these cases. I have personally had no experience with it. Its virtue is probably due to the lactic acid formed. Perhaps those cases that do well on it depend on certain faults of digestion for their constipation, which are remedied by the products of lactic fermentation. Frequently sulphur and the heavy carbonate of magnesia act well on the less persistent cases.

Fleiner holds that spastic constipation is the variety most often met with, but this statement is not borne out by a careful analysis of cases. When spasm is not excited by ulcer or other irritant condition it is rare to find a truly spastic constipation. However, atonic constipation is not infrequently accompanied by a spasm of the rectum or anus, due to ulcer, fissure, or other irritable condition of the parts. These must be appropriately treated by surgical or medicinal methods. Very often the dilatation of the sphincter alone will cure both cause and effect. Occasionally the valves of Houston become hypertrophied; these

are then divided by a Pennington clip without anesthesia.

In cases of gastroenteroptosis the sigmoid will be found kinked on the rectum, producing an obstruction of the sigmoid, the resultant dilatation augmenting the trouble. Should any of the previously considered methods be unavailing, an operation to anchor the sigmoid might be considered. Often in enteroptosis the transverse colon assumes a V-shape, thus allowing the fecal matter to collect here. This condition may sometimes be benefited by wearing a properly fitted abdominal bandage, by electricity, and by proper medication.

In recapitulation it is only necessary to say that every case of chronic constipation coming under our care should be studied with reference to the causal factor. No history is complete without inquiring into previous illness, habits, temperament, concomitant disease of the various organs, and lastly a complete investigation of the rectum, for a great many of the so-called incurable constipations have their perpetuating cause here.

Briefly, treatment must take cognizance of not only the cause but the result of the cause.

REMEDIAL MEASURES OTHER THAN DRUGS IN CARDIAC DISEASE.¹

BY H. A. HARE, M.D.,

Professor of Therapeutics in the Jefferson Medical College; Physician to its Hospital.

The very great importance of remembering that any drug capable of doing good may, if improperly used, be capable of doing much harm has been well emphasized, but, notwithstanding the fact that many men have laid stress on this point, the profession oftentimes ignores it. A proper recognition of this fact, namely, that whatever can do good can, if wrongly used, do harm, not only makes one cautious in the use of powerful remedies, but it also tends to impress upon us the wisdom of resorting to remedial measures other than drugs which, in some cases at least, cannot do harm if wrongfully used, and may do much good

if properly applied. Further than this, remedial measures other than drugs are not rarely the factors which make drug-therapy possible of success, and, again, they possess the great advantage of impressing the patient with "an outward and visible sign" of the fact that every effort is being made to hasten recovery. It certainly requires much faith for a patient to take a dose of digitalis once in eight hours, and still feel that everything is being done to overcome the dyspnea and other subjective symptoms which may be annoying him every moment. It is this recognition of the desire of the patient to feel that active agencies are at work which is often recognized by the charlatan, who uses all sorts of measures, scien-

¹Part of a symposium on cardiovascular disease before the Section on Medicine of the College of Physicians of Philadelphia.

tifically absurd but practically advantageous, in order that mental satisfaction may be achieved. To the man who is ignorant of medicine it matters little whether his body receives the benefits of massage given in a reputable way or in the form of osteopathy, in which case his leg is pulled in both senses of the word. Patients have said that they did not care whether it did good or not as long as they felt that some one was actively engaged in trying to get them well.

There are four cardinal factors, other than drugs, in the treatment of cardiovascular disorders, namely, rest, massage, hydrotherapy, and diet, and it can be fairly said that these are arranged in the order of their importance. If there is one great mistake in the treatment of ruptured cardiac compensation it is the use of drugs without the use of rest, and this is so for two reasons: Only by rest can a tired organ recover its strength, and even if a drug like digitalis, which increases cardiac nutrition, is used, it is usually futile to at once stimulate an organ, overfeed an organ, and overwork an organ all at the same time. Secondly, it is only by skilful adjustment of the dose to the needs of the patient that success can be achieved, and no patient who is on foot at home or in the consulting-room presents physical signs which may be called his "pathological norm." One of the most noteworthy facts to be observed in clinical medicine is the difference in the mental picture formed by the physician when he examines a case of cardiovascular disease in his office, and again after twelve or twenty-four hours' rest in bed. In the first instance very large doses seem needful; in the second no drug at all, in the sense of cardiac stimulation, may be required. Not only does this hold true of the heart but of the vessels as well, for rest raises hypotension and lowers hypertension in an extraordinary manner, and by so doing restores, at least in part, that most essential factor in cardiovascular disease, a normal relationship between the heart and its vessels, a relationship which, if disordered, results not only in disturbed cardiac action but interferes with the nutrition of the entire body and of the heart

in particular, and also involves the activity of the liver as a destroyer of poisons and of the kidneys as excretory organs.

The use of massage is of little value in edematous cases, but of superlative value in cardiovascular disease with high tension. The opening up of the cutaneous and subcutaneous pathways for blood and lymph very distinctly lowers blood-pressure elsewhere and relieves the heart of needless labor. Furthermore, that most essential factor in normal circulation, namely, the ability of the vascular system to relax in one place as it contracts in another, is reestablished, in place of a state in which the vessels consist of a rigid network universally constricted. Massage, in cases at rest, also performs the essential labor of maintaining nutrition and strength.

Hydrotherapy cannot be discussed in this brief space, but it is designed to maintain vascular elasticity, and if properly used is most advantageous. Both it and massage are of value in cases of hypotension to reestablish normal vascular tone, by cold effusions or by the drip sheet, if the patient is strong enough to react.

Lastly, diet must be considered. The allowance of food depends chiefly upon the circulatory state of the gastroduodenal tissues and the liver. It is usually useless to give enough food or drug to be of value until the patient's liver is unloaded by a mercurial purge and the low-grade gastrointestinal catarrh is dissipated. When foods are used they should of course be readily digested, and be hurried in their digestion by the use of pancreatin and taka-diastase. Here again rest is essential, because rest permits the system to expend in digestion the energy needful for its completion. Many of the digestive disorders of cardiovascular disease are due to this very lack of energy and blood supply.

Only one word need be added, namely: when we prescribe rest for a case of cardiovascular disease in one who earns his living by his brains rather than his hands, we must not forget that lying in bed and transacting business is not rest, for an active brain uses an immense amount of energy and blood.

EDITORIAL.

A WORD AS TO PSYCHOTHERAPY.

Within the last year or more a number of the profession, particularly in Boston and Baltimore, have been much interested in the subject of psychotherapy, and have devoted a great deal of time to its employment in the treatment of a large number of conditions, some of which have heretofore not been classed amongst those functional neuroses which can reasonably be expected to be modified or relieved by powerful mental influences. There can be no doubt whatever that those physicians who have been most skilful for years past in the treatment of neurotic or neurasthenic people have owed a large amount of their success to their ability to practice psychotherapy, although they have not seen fit to consider that their efforts along these lines, in association with other methods of treatment, were of sufficient importance to justify them in applying a definite and distinct appellation to the methods which they used. It is now almost forty years since Dr. S. Weir Mitchell instituted the rest cure, which, to a very large extent, consists in what would now be called by some "psychotherapy," in that the isolation of the patient from his or her friends, and from the world in general, not only produces an extraordinary mental influence, but also enables the physician who knows how to deal with human nature, particularly when it is accompanied by disease, to practice with tact and skill.

It has been said by those who have devoted themselves to the furtherance of new ideas in all departments of life that it is often necessary to be excessive in statement in order to call attention with sufficient emphasis to valuable measures of reform, but, while this may be true in many walks of life, it is very questionable whether it is a wise procedure in connection with scientific advance in medicine, particularly when the department of medicine which is involved is therapeutics, a branch in which too frequently empiricism and dogma take the

place of scientific accuracy. It is true that the studies which are now being carried on by medical men, and in Boston by non-medical men with medical assistance, serve to illustrate the fact that much good can be accomplished by remedial measures other than drugs, but those who are not carried away by enthusiasm must recognize that psychotherapy is not a panacea, and although valuable to a greater or less degree in many cases, should not be employed to the exclusion of other measures, because it is manifestly inadequate to deal alone with many of the conditions in which it has been employed. It is the duty of the practitioner when called upon to treat a patient to carry out not one but all of the measures which have been shown by years of experience to be advantageous.

There has recently been put on record a strong plea for the employment of psychotherapy not only as a palliative but as an absolute cure for constipation, without any mention being made of the various causes of constipation, and of the various underlying conditions which lead to it. There can be no doubt, of course, that regular habits as to the evacuation of the bowels and adequate attention on the part of the mind to the performance of this important function would do much toward correcting bad habits and so aid in curing the condition complained of, but as a matter of fact the insistence on the part of the physician and patient that the bowels shall be evacuated at a given time each day is not so much psychotherapy as it is a form of physical training. This instance, it seems to us, illustrates very well the excesses to which a legitimate therapeutic procedure can be carried. We all know that constipation is due to a host of causes: in some instances to disorders of digestion, in others to the ingestion of too little water, in still others to atony of the muscular fibers of the intestine or disorders of secretion in the intestinal juices and mucus, and in many other cases, particularly in women, to certain pelvic

states, none of which can be influenced except very indirectly by psychotherapy or physical training of this nature.

The cult, or vogue, of psychotherapists at the present time, because of their enthusiasm, are, we fear, to use racing parlance, "riding their horse for a fall." For a time they may attract attention to the measures which they advocate, but the very excess of their enthusiasm and the universality of the application of their method will, we fear, result in driving more conservative members of the profession to undervalue psychotherapeutic measures. As a matter of fact the employment of psychotherapy, as we have already indicated, is, like every other therapeutic procedure, a thing which should be applied with common sense and in combination with other methods universally recognized as useful.

No method of treatment has been discovered, or probably ever will be discovered, which is universally applicable even to functional disorders, and even if it could be universally applicable it cannot be employed to the exclusion of everything else. Of course, the success of such bastard theories as those which underlie Christian science, the very name of which is scientifically and etymologically erroneous, indicates that powerful mental impressions are exceedingly valuable in a large number of cases. It also serves to impress upon us the important fact that treatment ought not all to be medicinal, but this is a fact which is universally recognized, and one which we have repeatedly reiterated in these pages when we have urged the necessity of employing remedial measures other than drugs, the most of which simultaneously produce both physical and mental effects.

THE PROPHYLAXIS OF TYPHOID FEVER BY THE TREATMENT OF THE TYPHOID PATIENT.

Some months ago we called attention in these columns to the reports of cases which proved very conclusively that it was quite possible for persons who have been ill many months before from typhoid fever to widely distribute the specific bacillus of this disease

in their urine and feces, and it will be recalled that we mentioned a most interesting instance in which house epidemics of typhoid fever extending from Maine to New York were produced by a cook who denied any history of ever having been ill with typhoid fever, but whose stools showed a large number of the bacillus of Eberth. This subject is one about which there is a constantly increasing literature, and our German colleagues have been most active in its investigation. Still more recently a careful study has been made in England of this question under the auspices of the Home Office, which investigated a mysterious outbreak of typhoid fever in a reformatory for inebriates. Twenty-eight cases occurred in about fourteen months at irregular intervals, but several of them fell ill simultaneously. Contamination having been excluded from outside sources, it was finally found that the cause of the infection was a dairy maid who had had typhoid fever six years before, and from whose stools a pure culture of the typhoid bacillus was obtained. By her handling of the milk it became contaminated and the inmates were thus infected. So, too, in Glasgow an epidemic has arisen through the infection of milk by the milker who had typhoid fever sixteen years before, but who was still carrying the bacillus in her body. Kayser, two years ago, reported an instance of the spread of typhoid fever by a woman who kept a bakery. Every new employee in this bakery became infected, the woman having originally been a typhoid fever case.

The question which naturally arises, under these circumstances, is as to the measures which can be instituted to prevent this method of spread of the infection. It is manifest that the mere disinfection of the stools and of the urine during the time which the patient is ill is only a very limited method of prophylaxis. Patients convalescing from typhoid fever should be informed of the fact that they may act as disseminators of the disease, and should be instructed as to the necessity of seeing that their discharges are disinfected, or so taken care of that they cannot by any possibility infect others, either directly or indirectly;

and again, they should be informed of the necessity of using the greatest cleanliness as to their hands, particularly if they are engaged in the handling of foodstuffs.

It has long been known that the bacilluria of typhoid fever can be materially modified, if not entirely arrested, by the administration of urotropin or uritone during the entire course of the latter portion of the illness, and we have in our Progress columns published a research made by Dr. Crowe, of Baltimore, in which he has shown that not only is the antiseptic influence of this substance exercised in the urine, but that it also produces an antiseptic influence in the gall-bladder, which, as is well known, is a focus from which chronic infection is carried on for a long period of time after convalescence. In other words, the use of uritone, or urotropin, not only diminishes bacilluria but also decreases the number of bacilli in the stools, since the contents of the intestines are constantly reinfected in ordinary cases by discharges from the gall-bladder which contain hosts of bacilli.

The increasing frequency with which reports of typhoid carriers are appearing emphasizes the importance of using measures of this character. It has been well said that every case of typhoid death is an avoidable death, and it behooves us to limit by every means in our power the dissemination of this grave infection.

THE ACTUAL VALUE OF INTESTINAL ANTISEPTICS.

More than once we have discussed this subject in the editorial columns of the *THERAPEUTIC GAZETTE*, and have pointed out, repeatedly, that almost every substance which is powerful enough to destroy bacteria is also powerful enough to destroy the higher type of protoplasm which composes the human body. It is quite true that, in some instances, certain substances which have a specific influence on definite and particular microorganisms have been discovered, but these are few in number. Of course, it is conceivable that certain substances entering the alimentary canal may render the intestinal contents unfavorable

for the growth of microorganisms, and the constant use of salol and a number of other substances, more or less nearly related to carbolic acid, for this purpose proves that the profession has found that good results follow this line of treatment. An attempt to produce intestinal antiseptis, provided the kidneys are in a healthy condition and therefore not prone to be irritated by the elimination of the drugs which are administered as intestinal antiseptics, is probably an entirely harmless procedure. It is only when too much is attempted by the use of these substances that the method is subject to criticism, as, for example, when the attempt is made in the course of a systemic disease like typhoid fever to materially influence it by the use of intestinal antiseptics. Under these circumstances, although these drugs may diminish intestinal putrefaction and diminish tympanites, they cannot by any possibility exercise any definite effect upon the progress of specific infection, since the entire body is infected by the microorganisms which are present in the blood in quite as large number, proportionally, as they are present in the intestinal contents, the typhoid lesions in the bowel simply being a local manifestation of general infection.

Until comparatively recently our employment of these drugs was based very largely upon empiricism and supposition, and it has only been within the last few years that any adequate studies have been made upon the actual effect of so-called intestinal antiseptics upon the bacterial content of the bowel. Of these researches, those of Herter and Strasburger are probably most familiar to our readers. In the March (1908) issue of the *Journal of Medical Research*, Steele reports the results which he has obtained in studying this question, using methods in the estimation of bacteria which were to some extent original. The drugs which he employed were bismuth salicylate and betanaphthol. He found that these substances distinctly diminished the bacterial growth in the intestine in normal subjects, but he also found, as others had pointed out before him, that this influence might be exercised upon useful and benign microorganisms as well as upon those which were pathogenic

in nature, and so it is quite conceivable that under certain circumstances they may do more harm than good. It is interesting, too, to note in this connection that the results obtained by Steele varied very widely under the influence of diet. Indeed, diet and purgation had more effect in modifying the growth of intestinal bacteria than did the use of intestinal antiseptics. We think that this is a conclusion which can be readily concurred in by practicing physicians. For years we have constantly taught that the use of beef tea, chicken broth, and similar animal extracts in typhoid fever and in putrefactive diarrheas was bad practice, and this has been confirmed by noticing that patients receiving such foodstuffs were not only subject to increased diarrhea but to the passage of large quantities of extremely fetid flatus, which disappeared if other forms of diet were resorted to, because these animal broths are identical with many of the culture media which are commonly employed in the bacteriological laboratory when the most favorable conditions for the artificial growth of certain bacteria are desired. Steele therefore concludes, although he has made no comparative study of the effects of different foods, that by regulating the amount and character of the food ingested, we have the strongest and surest means of checking bacterial activity in the intestines.

THE CONQUEST OF THE VENEREAL DISEASES.

Ellis (*Medical Record*, July 11, 1908), with the above heading as his title, read a paper before the Woman's Medical Club of Chicago, in which he observes that we need to face venereal diseases in the same simple and courageous way that has already been adopted successfully in the case of smallpox.

Ellis states that the general acceptance of the fact that syphilis and gonorrhea are diseases and not necessarily crimes or sins is the proper foundation for any practical attempt to deal with this question from the sanitary point of view. He notes that the Scandinavian countries of Europe are the pioneers in practical hygienic methods of dealing with venereal diseases; that every

one, whatever his social and financial condition, is entitled to free treatment of venereal disease. Whether he avails himself of it or not he is bound to undergo treatment. Every diseased person is thus, so far as can be achieved, in the doctor's hands. All doctors have their instructions in regard to such cases: they have not only to inform their patients that they cannot marry so long as risks of infection are estimated to be present, but that they are liable for the expense of treatment as well as the damages suffered by any persons whom they may infect. The author notes that as the result of the systematic introduction of facilities for gratuitous treatment there is an enormous reduction of venereal disease in Sweden, Norway, and Bosnia. He further declares that every man or woman must be held responsible for the disease which he or she communicates. He quotes as a case in point the one reported by Dr. Dyer, to the effect that a patient with primary syphilis refused even charitable treatment, and carried a book wherein she kept the number of men she had inoculated. When Dyer first saw her she declared the number had reached 219, and she would not be treated until she had had revenge on 500 men.

The writer places most importance in the line of prevention upon a widely spread knowledge of the risks of disease by intercourse both in and out of marriage—indeed, apart from sexual intercourse altogether. He holds that sexual education should begin, so far as the elements are concerned, at a very early age, though information about venereal disease should not be given until adolescence, since it is unnecessary and undesirable to impart medical knowledge to young boys and girls, and to warn them against risks to which they are as yet little liable to be exposed. Indeed, the author holds that every adolescent youth and girl ought to receive some elementary instruction in the general facts of venereal disease, tuberculosis, and alcoholism. These three "plagues of civilization" are so widespread, so subtle, and so manifold in their operation, that every one comes in contact with them during life. A simple, concise statement of the actual facts concerning the evils that beset life is quite sufficient, ade-

quate, and essential. It is suggested that the woman who proposes marrying should ask her future husband as to his freedom from venereal diseases. Or, as a better plan, it is suggested that before an engagement is finally concluded each party should place himself or herself in the hands of a physician and authorize him to report to the other party. Such a report would extend far beyond venereal disease. The author very logically states that such a procedure would put an end to much fraud which now takes place in entering the marriage bond, and instances the mortification which a bridegroom naturally feels when his bride, having concealed the fact of her being epileptic, treats him to a typical fit on the wedding night. Indeed, there seems a slight leaning toward Sir Thomas More's ingenious and Utopian suggestion that each party before marriage should be shown naked to the other, Ellis holding that it would be ludicrous, were it not often tragic in its results, that any person should be asked to undertake to embrace for life a person whom he or she has not so much as seen. He further very logically points out that unless laws covering this matter are already justified by the actual practice of the great majority of the community it is useless for Parliament to enact them by statutes. He therefore holds that it is still premature to introduce the principle of compulsory certificates of health at marriage.

As to the person best fitted to impart instruction to growing youth, it is conceded that before puberty the mother is particularly fitted. After puberty the assistance of a physician should be called in. The method of lectures is regarded as excellent. These should be delivered at all urban, educational, manufacturing, military, and naval centers, wherever indeed a large number of young persons are gathered together. It should be the business of the central educational authority either to carry them out or to enforce on those controlling or employing young persons the duty of providing such lectures. The lectures should be free to all who have attained the age of sixteen. It is considered to be the business of parents or guardians of every adolescent youth

and girl to arrange that at this period of life there should be a private personal interview with a medical man in which the venereal risks and possibilities of life would be clearly pointed out. In the case of girls and women a woman doctor is suggested.

These views essentially voice the feeling of all who have given much thought to this matter. That venereal diseases will become reportable, that knowledge of them, together with other contagious diseases, will form a part of the ordinary education, that adequate provision for the protection of the community will be provided for the treatment of those suffering from such diseases, that punishments will be inflicted for the conveyance of such diseases, or damages be recoverable even when the absence of intent can be proved, and that, consequently, the incidence of these diseases will become distinctly less marked, seems fairly certain.

THORACOSTOMY IN HEART DISEASE.

Since many operations have now been performed upon the heart for the closure of wounds, and some successfully, and since the proposition has even been made of operating upon valvular disease, Morison's (*Lancet*, July 4, 1908) suggestion of performing a bone resection for the purpose of allowing more room to the greatly overgrown organ does not seem as much beyond reason as might have been the case ten or fifteen years ago. Morison considers the operation as indicated not only for mere bulk, but for the relief of pericardial adhesions. The amount of thoracostomy necessary is gauged by the area of forcible cardiac impulse; usually the removal of ribs and cartilage without interference with the sternum will fulfil every purpose. The history of the case reported by Morison is that of a clerk, who exhibited in an exaggerated degree the well-marked phenomena of aortic disease. The heart's apex beat was in the fifth and sixth spaces about four inches from mid-sternum. The area of cardiac dulness was increased. There was visible pulsation of the intercostal spaces to the left of the sternum, with exaggerated systolic impulse in the carotids and suprasternal space. The cardiac action on palpation was

heaving and concussive, with pronounced diastolic thrill over the aortic area. On auscultation a loud and coarse systolic and diastolic bruit was audible at the aortic base, and at the apex a rumbling presystolic murmur. The pulse was of the water-hammer type.

The patient suffered anginose pains, often severe, without arm radiations. A large flap of skin was raised over the area of pulsation, and $4\frac{1}{2}$ inches of the fifth rib and $5\frac{1}{2}$ inches of the sixth rib were removed. The soft flap was replaced and secured in place by sutures. Operation was followed by a drop in blood-pressure, and the anginoid pains were greatly diminished both in frequency and severity.

Since it remains to be proven that even in a small percentage of cases characterized by angina or anginose pain, the latter condition is due to the shock of the pulsating heart against the chest wall, this observation, together with the cases quoted in which operations were undertaken for the relief of pericardial adhesions, is of interest as indicating a possible means of mechanically easing the labor of an overburdened heart, rather than as demonstrating the probability of relief following operation even in a small percentage of such cases.

ISCHEMIC PARALYSIS.

This title is usually understood as applicable to a condition of forced contracture of the hand due to an ischemic myositis, usually incident to tight bandaging. Even when recognized early it is regarded as almost incurable, excepting by operative means. The affection is particularly characterized by the fact that paralysis and contraction occur simultaneously, whereas in other forms of paralysis contraction follows later.

Volkman (Robert Jones, *American Journal of Orthopedic Surgery*, April, 1908) notes that similar contractions have been known to follow blood stasis due to compression with an Esmarch bandage, to injuries of large vessels, and to exposure to extreme cold. He regarded the worst cases as those involving the hand and fingers and

considers the prognosis as invariably bad, since any attempt at forcible extension results in rupture of tendons and fracture of the bone.

Jones observes that in 24 cases with which he has been personally connected, 19 were associated with fracture, and that in 13 of these the malunion was very pronounced. In six cases no fracture was present; in two the arms had been crushed by wheels; in one pad pressure had been kept upon hand and forearm for twenty-four hours to check bleeding from a punctured palmar arch; in another an elastic tourniquet had not been removed from a small child's arm after an operation upon webbed fingers; in still another instance the contraction followed a rapidly developing myositis ossificans.

In 12 cases out of the 24 a definite history of tight bandaging was obtained, and in nine of these skin sloughs had formed. All the patients were under fourteen years of age. Two cases were observed in which the ischemic change had just started in the third week after fracture of the forearm. Release from bandaging, followed by massage, brought about a complete recovery in a few weeks.

Operation is usually practiced for the relief of ischemic paralysis, having in view the lengthening of contracting tendons, accomplished either by division and union of tendon directly, or indirectly by removing a portion of the radius and ulna and wiring them in the shortened position.

Jones holds that open operation performed on arms, usually cicatricial and always of deficient circulation, is hazardous and inadequate, and that since after any type of operation almost immediate mechanical strain must be applied to rectify existing deformity, there is danger from operative attack. Therefore he relies entirely upon a purely mechanical and manipulative routine.

It is practically impossible to fix the blue, glazed, contracted hands by splints, since traumatic ulcers and gangrene are extremely likely to result. The obvious deformity consists of flexion of the wrist, slight hyperextension of the metacarpophalangeal range, with contraction of the

fingers. Where nerves have been quite destroyed recovery is impossible by any method practiced, but when this condition is not present it should be the surgeon's aim to get the fingers and hand fully extended and to trust that the nerve lesion will diminish and disappear when the muscular and tendinous structures are released from contracture. This end Jones attains as follows: He cuts zinc or sheet iron into five splints which will fit the patient's fingers when extended. An assistant flexes the wrist and holds it forcibly and steadily in that position. This relaxes the fingers, and each is then separately splinted. The wrist is then released, and the patient is directed to systematically attempt to extend the now over-contracted metacarpophalangeal range. After a few days this can usually be done sufficiently to admit a splint to be applied over the finger tops to the wrist-joint, the wrist being fully flexed to admit of this. The fingers are therefore bound on five splints, and over these the hand is fixed in a splint which reaches to the wrist. For several

days the hand is exercised in the direction of extension. Then a splint is applied over the other splints extending from the fingertips to the elbow. This is at intervals altered, so that by degrees the wrist is fully extended. For some weeks this position is maintained until all contractile elasticity is lost, when the splints are removed and the hand massaged.

Jones states that as soon as the hand is hyperextended and remains so without any tendency to relapse, the circulation will be found almost invariably to have improved, and in those cases in which the nerves have escaped destruction the fingers will resume their normal appearance and use. In many cases in which the nerves have lost their function during the contracture of parts, the extension of the hand is the starting-point of recovery. In every case improvement of tissue results. This method allows of much more effective manipulation than where an open wound exists, and it elongates structures which from their position it would not be safe to divide.

REPORTS ON THERAPEUTIC PROGRESS.

THE TREATMENT OF CHOREA.

In an article in *Folia Therapeutica* for April, 1908, VOELCKER says of internal medication that the length of the list of drugs which have been recommended in the treatment of chorea is a sufficient commentary on their efficacy in the disease. For many years arsenic has been perhaps the most widely employed drug. Originally given in moderate doses, it has of late years been pushed so as to bring patients rapidly and markedly under its influence. In some cases this line of treatment has been followed by distinct improvement, but in other cases it has failed, and the therapeutical problem has been complicated by the necessity of treating a case of chorea and one of arsenical poisoning in the same individual. At the present time the author has quite given up the use of arsenic in the acute stages of chorea, though it is useful in combination with iron and nuxvomica in the treatment of convalescence

and in the paralytic forms. Ergot has also been recommended, but in the writer's hands has not justified the claims made for it. In combination with strychnine he has also failed to get good results from its use.

"Specific" treatment of chorea has been based on the view, which the author holds very firmly, that in the vast majority of cases chorea is a rheumatic manifestation. Accepting this as the correct pathology of the disease, treatment has been directed to combat the rheumatic poison which we assume to be present in the rheumatic state. First and foremost among these remedies we place the salicylates and aspirin.

The experience of the author in the treatment of chorea with salicylates has been far less satisfactory than that of others who have advocated the use of the drug, for he has rarely seen any definite improvement follow its use, and he has on several occasions seen chorea develop

in children who were actually under the influence of salicylates for the treatment of some active rheumatic condition. When there are active rheumatic conditions such as arthritis, tonsillitis, pyrexia, and possibly, in some cases, recent pericarditis or endocarditis, then salicylates are useful for the treatment of these conditions, though he has not been able to convince himself that they produce any definitely beneficial effect on the chorea. Dr. Lees, however, speaks very decidedly in favor of the administration of large doses (400 to 500 grains per diem) of salicylate of soda, but his experience with less heroic doses has not been so favorable as far as the chorea is concerned, while the risks of the production of conditions of acidosis must be prominently borne in mind. In the present state of our knowledge of rheumatism the author does not believe we are justified in taking up the position that whatever is rheumatic must therefore respond to salicylates. One striking example in illustration of this is to be seen in the case of rheumatic nodules, which few would deny to be, in children, pathognomonic of rheumatism, and yet these nodules do not show any definite response to treatment by the salicylates. The author has, in cases of chorea uncomplicated with other rheumatic manifestations, discarded the salicylate treatment.

In uncomplicated chorea the best results have followed the administration of sedatives. For this purpose bromides and chloral have been extensively employed, but though useful in some cases have been very unsatisfactory in many, and chloral is not a drug which should be used without great care, especially in a disease in which the heart is so often affected, either with dilatation or with organic valvular mischief. More than two years ago, following Dr. Essex Wynter's suggestion, the author used chloretone as a sedative, and had very gratifying results from its use; the period of attack, the severity of the movements, and the mental instability were all favorably influenced by the drug, but it has some minor disadvantages, in

that it is rather apt to make the children too drowsy, there is sometimes produced an erythematous rash, and the eyes get a puffy appearance not unlike that produced by whooping-cough, but unaccompanied by albuminuria. In the treatment of chorea the writer has also had distinctly good results from the use of trional. Under its influence the movements subside more rapidly than with any other drug he has employed, the mental condition is distinctly improved, there is less instability, and this is not accompanied by as much drowsiness or heaviness as he has observed with chloretone. He has recently tried a new drug called bromural, which is a monobromisovalerianylurea. Although this drug has proved very useful in the treatment of the restlessness and sleeplessness which accompany so many cases of heart disease, yet its influence on the progress of those cases of chorea on which he has tried it has not been more beneficial than that of either chloretone or of trional.

In trional we possess a drug which has a very distinctly beneficial effect in chorea, both in alleviating the symptoms and, what is also a very important point, in reducing the time required for the treatment of the disease. Trional has not in the experience of the author ever caused any cardiac depression, and the only unfavorable condition he has observed in cases taking it has been that some of the children have had rather vivid dreams, but this is only exceptionally met with. He has never seen any delirium following its use.

Trional is practically insoluble in water, so that it is best administered in the form of a cachet or given in suspension. Given in these forms the drug does not cause gastric disturbance, vomiting is not observed, nor does the appetite suffer. The following mode of exhibiting trional has been suggested:

℞ Trional, gr. xv;
P. sacc. alb., 3ij;
Gum. tragacanth., gr. iij;
Gum. arab., gr. iij;
Aq. flor. aurant., 3ijss;
Aq. laur. ceras., 3ss.

Misce. Fiat. emuls. One-third part to be taken in milk or water as a single dose.

The dose of trional with which the author generally commences is 5 grains three times a day for a child over four, but this dose should be increased by more frequent administration, so that the child is taking 5 grains every six or every four hours. It is, the author believes, more advantageous to administer the smaller doses at shorter intervals than to give larger doses at longer intervals.

There is, at the present time, no specific for the treatment of chorea; certainly there are cases in which even trional fails to arrest or even to diminish to an appreciable extent the movements in chorea. Such cases are best treated by hot packs if the movements are severe or if the sleeplessness is marked. In the severest form it may be necessary to resort to the inhalation of chloroform vapor, but this is very rarely called for.

When choreic movements are subsiding the dose of trional should be diminished by reducing the frequency of administration, and during convalescence preparations of iron, arsenic, and nux vomica, or cod-liver oil and iron, will prove most useful. Headache, which is a not infrequent accompaniment of chorea, is best treated by aspirin or by a combination of phenacetine and citrate of caffeine. For maniacal conditions the hot pack is of the greatest use, while in hyperpyrexia the use of the cold pack or cold bath is imperative.

When we meet with concurrent chorea and arthritis, tonsillitis, pyrexia, or peri-myocarditis, then it is best to administer both trional and an antirheumatic drug, and for this purpose in children the author prefers aspirin or salol to the salicylate of soda. In cases of pericarditis the application of an ointment containing one drachm of oil of gaultheria to one ounce of lanolin over the precordium will often give great relief.

All through the course of an attack of chorea attention must be paid to diet, which must be liberal, easily digested, and, in the paralytic forms of the disease, administered at short intervals and in a readily assimilable form. Alcohol, which is very rarely

called for in ordinary cases of chorea, is very useful in cases marked by much wasting, and in the paralytic forms of the disease; it is best given in the form of port wine.

In the paralytic form of the disease food and sleep are the chief desiderata. Neither the antirheumatic nor the sedative drugs have seemed to the author to exercise any beneficial effects, but strychnine, arsenic, iron, and cod-liver oil, combined with careful feeding and with massage, have given the best results.

It is sometimes a difficult matter to determine at what period a choreic child should be allowed to get up. In the absence of complications, provided the heart is not dilated and that the knee-jerks are present, we may with benefit let a child get up as soon as it can feed itself quite well and can walk without assistance. It is at the stage of convalescence that a stay in the country is most productive of benefit.

THE OPHTHALMO-TUBERCULIN REACTION.

The *Journal of Medical Research* for February, 1908, contains an article upon this subject by FLOYD and HAWES, in which they point out that the advantages of the ophthalmo-tuberculin reaction over the cutaneous or subcutaneous methods are that it is absolutely painless, whereas both of the others are painful or disagreeable to say the least. Practically no constitutional symptoms follow the use of the eye, whereas in the subcutaneous test they are important to obtain and often very distressing, and also occasionally occur in the cutaneous method. In acute febrile conditions, and also in diseases with an erythematous eruption, the eye test is still of value and its results equally positive, while the other tests are very limited in value under these conditions. This test is also recommended by its great simplicity, its rapidity, and the general definiteness of the results obtained.

In the following tests the authors have used the method suggested by Baldwin in

denoting the extent of the local inflammatory reaction. In all they have taken some two hundred and thirty-two cases, many of them proven tuberculous, some of a doubtful nature, and a large group of non-tuberculous and normal cases. Their tests have been carried on in children and adults and also in a few infants. The test has not been limited to cases of tuberculosis in the lungs, but they have also included lesions of the eye, joints, glandular tissues, and the genito-urinary apparatus. A large number of cases have been tested with the stronger solution (solution II) only, and the test with solution I omitted. This has been necessary in many cases, as the tests were carried on in an out-patient clinic, and the difficulty of getting this class of patients to report frequently is well known.

Group I.—Cases of apparently normal persons; in number twenty-six. Of these twenty-three cases were tested with solution II, and three with solution I. Of the cases tested with solution II, four reacted and two gave doubtful reactions to tuberculin given into the eye.

None of the cases treated with solution I reacted.

Of the cases which gave positive tests, the reaction varied from a slight injection of the conjunctiva with a reddening of the caruncle, which occurred in these cases, to a marked injection of the entire conjunctiva, slight edema of the eye, and the formation of sero-pus, that occurred in three cases. In these last three cases the reaction lasted for three days, and in one case the conjunctivitis persisted for a week. A tuberculin test, given subcutaneously in one of these cases giving a marked ophthalmic reaction, was positive. All of these apparently normal persons who reacted had been in contact with tuberculous patients for some time.

Group II.—This group consisted of thirty-two cases of acute disease other than that of tuberculosis, including typhoid fever, pneumonia, osteomyelitis, cerebrospinal meningitis, and appendicitis. Among these cases five positive reactions were obtained, and these were all in children vary-

ing from two to twelve years of age. One doubtful reaction occurred. None of the cases that reacted were suspected of being tubercular from clinical symptoms or signs. The local reaction was marked and unmistakable. On account of acute symptoms and fever the ophthalmic test could not be confirmed by tuberculin given subcutaneously. If, however, we except this positive ophthalmo-tuberculin test as showing a tuberculous focus in the body, we are thus enabled in these cases to forestall the development of any acute tubercular symptoms by suitable therapeutic measures.

Group III.—In this group the writers include forty-three cases of children and adults suffering with various chronic diseases, as infantile paralysis, flatfoot, scoliosis, osteomalacia, chorea, nephritis, myocarditis, scleritis, keratitis, and bronchitis. Four positive reactions were obtained in children and three in adults, seven in all. The clinical diagnosis in these cases reacting were asthma, scleritis, scoliosis, congenital hip, infantile paralysis, and necrosis of the femur.

In those cases with the diagnosis of scleritis the unaffected eye was used, and the stronger solution alone, as repetition of the test was impossible. Three of the cases in this group were given tuberculin subcutaneously in doses of one-tenth, one, and ten milligrammes, at an interval of four days, where the eye test showed some questionable reddening of the caruncle. A negative reaction was obtained in each instance. In two cases in which a definite eye reaction was obtained—one a case of scoliosis and the other a case of necrosis of the femur—tuberculin was given subcutaneously to confirm the eye test. One of these gave a typical febrile reaction to one-quarter milligramme of T. A., and the other a reaction to one milligramme of tuberculin.

Thus in this group the results obtained by tuberculin given subcutaneously or ophthalmically were the same.

Group IV.—In this group were included a number of cases—seventy-two in all—in which tuberculosis was suspected, as in

dry pleurisy, pleurisy with effusion, cervical adenitis, scleritis, and cases of slight indefinite or transient signs in some portion of the lung; also cases diagnosed clinically as tuberculosis of the hip, knee, ankle, or spine, all occurring in children. Of these cases twenty-six gave the ophthmo-tuberculin reaction. Some showed a reaction to solution I, and the others required solution II to give any result. A number of the cases diagnosed clinically as bone tuberculosis failed to react, not only to the ophthalmic test but also to the subcutaneous injection of tuberculin.

In this group of cases tuberculin was given subcutaneously in ten cases to confirm the eye reaction. Of these cases five that had given a negative eye test were negative to injections of one to five milligrammes of tuberculin. Of three positive eye tests all gave a positive reaction to one milligramme of tuberculin given subcutaneously. Of two negative eye reactions there were obtained positive reactions to tuberculin given subcutaneously in each instance, but only in amounts of ten milligrammes each.

A number of cases in children gave a positive ophthalmic test with solution I, but failed to react to solution II when repeated four days later in the other eye. This is difficult to explain unless it be due to the stimulation of the body by the small amount of tuberculin absorbed from the eye, and thus making the system resistant to the second test.

A number of cases in this group with a rare rôle or slight dulness and increased whisper voice at one apex in the lung were proved not to be due to active tuberculosis by both methods of giving tuberculin.

A number of cases in this group following the subcutaneous injection of tuberculin have a recurrent reaction in the eye that had given a positive ophthalmic test.

Group V.—Of the fifty-eight cases in this group there were included patients with phthisis, tubercular peritonitis, tubercular laryngitis, and tuberculosis of the kidney. All the cases were proved to be

tubercular by the presence of tubercle bacilli in the sputum, or urine, or by operation. Of these cases, twenty-eight incipient and well-marked pulmonary cases reacted positively, ten moderately advanced and three advanced cases failed to react, and six gave a doubtful reaction. Of the six cases that gave a doubtful reaction five were receiving tuberculin therapeutically, and the failure of the test in the other case is unexplained. Of the ten moderately advanced cases that failed to react eight were receiving tuberculin (T. R.) therapeutically, and as is well known, this produces an antituberculin immunity. The failure of three advanced cases to give a positive test was expected on account of the advanced condition. Of eight cases of tuberculosis of the larynx all gave the eye test, even where the process was advanced. Of three cases of tubercular peritonitis two gave a positive reaction and one failed to react on account of his advanced condition. Two cases of tuberculosis of the kidney reacted positively.

Thus out of the group only three cases were negative where a reaction was to be expected. Of the other cases which did not react, they were either under tuberculin treatment or were very advanced. In the cases of the group that were receiving tuberculin therapeutically it was of some interest to note the difference in susceptibility to tuberculin. Some cases, although receiving large doses subcutaneously without reactions, gave a marked response to the eye test; other cases, although receiving relatively small amounts, gave no ophthalmic reaction whatever. It may be that this test will give us a simple indicator as to a patient's susceptibility to the products of the tubercle bacillus, and thus aid us in deciding the length of time required for treatment and also as regards the prognosis in a case.

From their experience and that of others with the use of the ophthmo-tuberculin test they feel that it is a very valuable addition to our various means of securing an early diagnosis in such a multiform and extensive affection as tuberculosis. It has

not proved to be as accurate as the subcutaneous methods in those cases in which general susceptibility to tuberculin is slight. It is also subject to those limitations which apply to tuberculin given in any form for diagnosis. Nevertheless, on account of the great simplicity of the test, the freedom from untoward symptoms, and the general reliability of the results obtained, the writers feel that it will be of great service to the general practitioner in the prompt diagnosis of tuberculosis.

Floyd and Hawes conclude that:

1st. In using tuberculin diagnostically either the cutaneous, subcutaneous, or the ophthalmic methods may be employed.

2d. The ophthalmo-tuberculin test is recommended by its simplicity, lack of constitutional symptoms, and freedom from danger to the patient.

3d. It may be of value, not only in the simple uncomplicated case, but also in acute febrile conditions as well.

4th. It will not replace older methods, but used in conjunction with them will be of great service.

SALINE INFUSIONS.

It has become so common a practice to inject normal saline infusion into the subcutaneous tissues as a means of stimulating a failing heart that we are perhaps inclined to overlook the fact that this procedure has its limitations and dangers. Edema of the lungs, watery diarrhea, effusions into the serous cavities, and collapse have been known to follow the use of this method of stimulation. According to Rössle, who writes in a recent issue of a German medical journal, a condition of the heart muscle consisting in cloudy swelling of the muscle with increased friability has been found in a sufficient number of cases to enable him to assert with a fair amount of accuracy that a saline infusion has been given shortly before death. He records two cases in which he considers that the post-mortem showed a directly injurious effect of the infusions. The introduction of a large amount of saline fluid except after a severe hemorrhage appears to favor

the accumulation of serous fluid in various organs and tissues, and this cannot but be a source of danger in cases in which the cardiac muscle is impaired or the elimination by the kidneys is defective. We should, however, be disposed to doubt the accuracy of Rössle's conclusions as to the direct effect of saline infusions upon the cardiac muscle, and to think that more probably the softening of the cardiac muscle was an antecedent condition and one which produced the clinical symptoms to combat which the injections had been given. Nevertheless, it is well to bear in mind that saline infusions should not be given recklessly.—*Australasian Medical Gazette*, Jan. 20, 1908.

THE HOME TREATMENT OF PULMONARY TUBERCULOSIS.

In the *Journal of the American Medical Association* of March 21, 1908, Brown writes on this topic, and in conclusion says that in the treatment of tuberculosis a proper regulation of rest and exercise is the most important point. Absolute rest must be enforced during and for some time after the existence of toxemia. The exercise must begin after nearly normal weight is gained, and be very gradual, so as not to produce toxemia. It is best that the exercise be begun so that there is an interval of a week or more between two exercise periods.

The second important factor is good air. Fresh country air, or a climate which is not too warm, and at an altitude of not more than 1000 to 1500 feet, is desirable. Air should be circulating through the patient's room all the time. It is of some benefit perhaps, in some instances, for the patient to live out-of-doors. This is of little importance, however, when compared with the significance of the rest and exercise.

The third important factor is good food. The patient should have three good meals a day, and between each two meals a lunch of eggs and milk. Forced feeding is not necessary, but good feeding is essential.

It should also be repeated that consumptives are curable, and that it is being demonstrated every day. The tuberculous patient must, however, be treated as though he were really sick—just as sick as if he had some acute disease, as scarlet fever, typhoid fever, or pneumonia.

In tuberculosis, when there are signs of progress of the disease, it is of far more importance to keep the patient quiet than to force him to eat unusually large quantities of food, or keep him out-of-doors all the time, or give him large quantities of cod-liver oil, creosote, or other drugs.

THE INJECTION THERAPY OF NEURALGIA.

The *Albany Medical Annals* for May, 1908, points out that practically all of the methods of treatment advised for neuralgia have one feature in common, and that is that they are practically always symptomatic, and probably will remain so as long as we know no more than we do at this time of the true nature of neuralgia. Schleich deserves credit for having opened the way for the treatment of painful disturbances of the nerves by the injection of large quantities of fluid in the vicinity of the disturbed nerves. A number of years passed after he proposed this method of treatment before it received any general adoption. At first cocaine in some form or other was used, and the benefit derived was believed to be due to the drug employed. Further observation, however, led to the conclusion that the result was rather due to a mechanical than to any pharmacological effect. As a result of this the use of drugs in these injections became less and less frequent, and normal salt solution replaced them.

In the *Deutsche Medicinische Wochenschrift* (No. 6, 1898) Dr. Erich Schlesinger states that he has been struck by the anesthetic properties of cold solutions, either in the nature of cold applications or ethyl chloride or ether spray, and has employed cold salt solution in injections in the treatment of neuralgia. He at first expected

that the injection of cold fluids would give rise to pain, but experience has shown that it does not. Furthermore, cold solution does not appear to influence the vitality of the nerves or tissues, for it is quite possible to freeze the vagus nerve of a rabbit without in any way interfering with its subsequent function. Schlesinger makes use of salt at zero temperature centigrade, which he secures by immersing the salt solution in finely chopped ice mixed with salt and ammonia.

The technique of the injection consists in the introduction of a small quantity of the solution beneath the skin, and in the case of the sciatic nerve the use of a needle eight centimeters long, which is inserted just below the gluteal fold in the immediate vicinity of the sciatic nerve. He does not believe it is possible, except in occasional instances, to secure intraneural injection, nor does he regard that as necessary; in fact, he seems to think that direct injection of the nerve might be harmful in that it might lead to degeneration of certain of the motor elements. The introduction of the cold fluid in the immediate vicinity of the nerve is followed at once by cessation of the pain, and this has a very important psychic effect upon the individual, which, as every one knows who has had any experience, is of the greatest importance in the treatment of neuralgias.

Schlesinger emphasizes the fact that all forms of stretching of the sciatic nerve have been practically of no avail in the treatment of sciatics. There is very frequently more or less spasm of the muscles surrounding the nerve, which gives rise to a variety of contractures. These contractures are very largely relieved by the injections, with the result that whatever mechanical insults to the nerve may have arisen from these contractures are entirely eliminated. He reports forty-two cases of sciatica, many of which were cured by a single injection. In about sixty per cent, however, of the cases repeated injections were necessary. The author in the cases in which he made use of his treatment was specially struck by the coexistence of gouty attacks with the

sciatica. In fully seventy per cent of his cases such an association was demonstrated, which Schlesinger believes is an indication for the observance of a very strict dietetic régime in cases of sciatica. He has also made use of the same method in the treatment of other types of neuralgia, intercostal, trigeminal, etc. He has also had success in the treatment of the girdle sensation, as well as the gastric crisis in cases of tabes.

THE LIMITATIONS OF THE NEWER TUBERCULIN REACTIONS.

The *Medical Record* of April 25, 1908, points out the fact that the enthusiasm that has greeted the advent of the recent cutaneous and ophthalmic methods for the early diagnosis of tuberculosis has reached the stage when it must needs be tempered by the searching criticism of experience. That there has been an urgent need for a simple clinical test for the detection of incipient tuberculosis is amply evidenced by the widespread adoption of the methods of von Pirquet and Calmette. The literature, particularly of Germany and France, is teeming with reports, some favorable and some unfavorable, upon the real practical utility of these newer diagnostic resources. The comparative value of the various reactions in children has received the attention of F. Reuschel (*Münchener medizinische Wochenschrift*, Feb. 18, 1908). This observer has found that the original hypodermic method of Koch is not trustworthy in cases of severe phthisis and in acute miliary tuberculosis, and cites the observations of Kohler and Behr that 25 per cent of normal individuals react with fever to the hypodermic injection of tuberculin, this febrile response being attributed to hysteria. Of far greater value than the constitutional symptoms of the subcutaneous injection of tuberculin has been found the local phenomena in the region of the needle puncture. This, the so-called "puncture reaction" (stichreaction" of Escherich), consists of a sharply circumscribed red area of infiltration, edema, and pain surrounding the site of puncture. Reuschel has found that the

puncture reaction is constant in cases of tuberculosis, and that it is present in cases that do not react with fever. He believes that the puncture reaction is particularly available for suspicious cases that are regularly "running a temperature," in which, of course, the febrile response to tuberculin would be entirely masked. On the other hand, a febrile response to tuberculin, in the absence of the puncture reaction, is not to be regarded as an indication of the presence of tuberculosis. As regards the cutaneous reaction of von Pirquet, Reuschel found that it was convenient and adapted for general use in practice; when positive, it indicated tuberculosis, but its negative occurrence after a single trial gave no decisive answer. In the latter case the performance of the puncture reaction would clear up the difficulty. Both methods were not to rival the older method of Koch, but all three were to supplement one another. It was still to be investigated whether the local sensitization revealed by the newer methods indicated the presence of antibodies of tuberculosis, which this observer doubted, or whether it revealed the presence of antibodies to the proteid substances of the bouillon.

Prof. E. Feer (*Münchener medizinische Wochenschrift*, Jan. 7, 1908) finds in the von Pirquet reaction a valuable aid in the diagnosis of tuberculosis in children. But the intensity of the reaction is not proportionate to the extent of the lesion, and while the positive reaction indicates the presence of tuberculosis, a negative result does not exclude this disease, for in the presence of cachexia, miliary tuberculosis, and meningitis there is no cutaneous reaction. In children the vaccination test is considered preferable to the ophthalmic reaction, which is absolutely contraindicated in scrofulous children, on account of the frequent occurrence of severe conjunctival irritation and phlyctenulæ following the instillation of tuberculin. The value of the cutaneous reaction diminishes as age advances, for in older children and adults apparently in perfect health, some of whom are possibly carriers of small, inactive tuberculous foci, in

the majority of cases there is a positive reaction to both the cutaneous and conjunctival tests. Thus, von Pirquet has found that in individuals from ten to fourteen years of age 55 per cent, and in adults 90 per cent, react positively to both tests. Feer found that between the ages of ten and fifteen years 35 per cent react positively. Thus at this period of life the positive reaction is of limited significance, while to the negative response a greater value must be accorded. The rule is laid down that the nearer one approaches the nursing period, the more the positive reaction is apt to indicate the presence of tuberculosis.

A careful study of the comparative values of the skin and ophthalmic reactions was made by Carlos Maunini (*Münchener medizinische Wochenschrift*, Dec. 24, 1907). He found that both reactions occurred with great constancy in all cases of tuberculosis, excepting those that were far advanced, and that although it was quite probable that the reactions were specific, this had not yet been proved. In individuals in whom there was no reason to suspect tuberculosis, a positive cutaneous reaction occurred six times as frequently as the ophthalmic. Assuming that the reactions were specific, this contradiction was explained on the hypothesis that the ophthalmic reaction revealed a latent focus.

That the ophthalmic reaction is not altogether a harmless procedure is indicated by the experience of Wiens and Gunther (*Münchener medizinische Wochenschrift*, Dec. 24, 1907). These observers found that the instillation of a one-per-cent solution of tuberculin in a number of cases caused severe ocular disturbances, in some lasting for several months. These severe reactions occasionally occurred in patients in whom there was not the slightest evidence of tuberculosis. It is concluded that the Calmette reaction is by no means as harmless as has been thought, and is to be absolutely excluded in all cases of chronic conjunctivitis, no matter how mild.

In 17 positive cases of tuberculosis in which the diagnosis was confirmed by the presence of bacilli in the sputum, C. Klein-

berger (*Münchener medizinische Wochenschrift*, Dec. 24, 1907) found that seven cases did not react at all, and that two reacted doubtfully, to the ophthalmic test. A positive reaction following a second instillation into the conjunctival sac was of no clinical value, for in 46 cases in which tuberculosis was clinically excluded, and in which the first instillation was followed by a negative or by a mere trace of a positive reaction, a second instillation was followed by a markedly positive reaction in 36 cases, which was 78 per cent of the entire number. This percentage was certainly too large to be explained on the basis of a latent tuberculosis. It simply indicated that the conjunctiva was sensitized by the first instillation. This observation has more recently been confirmed by M. J. Rosenau and J. F. Anderson (*Journal of the American Medical Association*, March 21, 1908), who found that in twelve normal individuals in whom the first instillation of tuberculin was negative, the second instillation after an interval of fifty-one days was followed by a positive result. The experiences prove that no reliance can be placed on the result following a second instillation of tuberculin.

There have been a number of investigations whose results argue against the specific nature of the ophthalmic reaction. Blum (*Münchener medizinische Wochenschrift*, Jan. 14, 1908) has found a positive reaction in 31 out of 188 cases which were clinically non-tuberculous, the positive reaction occurring in cases such as emphysema, chronic bronchitis, tabes dorsalis, apoplexy, sciatica, severe anemia, enteritis, pleurisy, and diabetes. Similarly, S. Cohn (*Berliner klinische Wochenschrift*, Nov. 25, 1907) found that 8 out of 12 typhoid patients presented the specific reaction. F. Levy (*Deutsche medizinische Wochenschrift*, Jan. 16, 1908) obtained a positive reaction in 2.5 per cent of 235 non-tuberculous patients; while P. Eisen (*Beiträge zur Klinik der Tuberculose*, vol. viii, No. 4) obtained a positive reaction in 31 per cent of 17 patients with various non-tuberculous affections. G. Serafini (*Giornale della R. Accademia di Medicina*, Turin, November, 1907)

found that the ocular reaction was not conclusive in cases of tuberculous process in the bones and joints. The reaction was positive in certain gonorrheal articular affections, as well as in several cases of senile and other non-tuberculous bone affections. A. Plehn (*Deutsche medizinische Wochenschrift*, Feb. 20, 1908) obtained a positive reaction in two out of five cases of typhoid; in two out of five patients with scarlet fever; in six out of twelve with articular rheumatism; in three out of six with acute bronchitis; and in three of enteritis. In none was there any tuberculosis.

It cannot be denied that the cutaneous tuberculin reaction is a valuable addition to our diagnostic armamentarium, furnishing strong presumptive evidence of the presence in the body of some tuberculous focus, either healed or active, but reliable only when considered in connection with other signs of the disease. The positive reaction should be interpreted in the light of the numerous recent investigations of the limitations and the possible erroneous conclusions that might be derived from it. In addition to its diagnostic value, this reaction bids fair to throw considerable light upon the problem of immunity in tuberculosis. The ophthalmic reaction, however, is one that should be employed with extreme caution, for the procedure is by no means as harmless as was at first supposed, and many cases are now on record of corneal ulceration and other untoward results of the tuberculin instillations.

THE USE OF IPECACUANHA IN HEPATITIS.

MURRAY writes in the *Indian Medical Gazette* for April, 1908, on this topic, and reports some cases which show very strikingly the value of ipecacuanha in the treatment of that form of hepatitis which follows upon dysentery—cases which we know so frequently drift on to the formation of liver abscess.

So marked were the symptoms and signs in some instances which the author quotes that he thinks any one would have been

justified in exploring the liver for abscess, and yet the condition entirely cleared up under ipecacuanha and no other treatment. In one instance the liver was explored in five places with negative result, and on ipecacuanha being given again the inflammation completely subsided. These cases of hepatitis are often characterized by a very insidious onset; fever is usually present, and one frequently obtains the history that the patient has been treated for some time with quinine without any beneficial results. In the great majority of instances a history of recent dysentery or diarrhea can be obtained, and in one case the patient was actually under treatment for dysentery when acute hepatitis developed. As an aid to diagnosis, first, the author mentions the leucocyte count, which has been so thoroughly worked out by Major Rogers. It is of great value, especially in very indefinite cases, a leucocytosis of varying degrees being usually present, and one in which the polynuclear cells remain at or near their normal percentage. Secondly, the *x*-rays. The absence of any definite shadow in the liver substance excludes in the great majority of cases the presence of an abscess, although the diaphragm on the right side may be seen to be firmly fixed, while it moves freely with respiration on the left.

So firmly does the author believe in ipecacuanha for such cases that he expects to find in time that if more of them are thoroughly treated with this drug in the stage of acute hepatitis the formation of the hepatic abscess will be prevented. It must be clearly understood that only cases in the presuppurative stage are referred to, as the writer does not for one moment mean to imply that once an abscess has formed ipecacuanha will be of any use whatever.

He has records of cases treated in hospital for hepatitis following dysentery without ipecacuanha discharged apparently cured, but only to return at a later date with an abscess actually present. So far he has not been able to trace the same result in a case thoroughly treated with ipecacuanha in the early stage. It is true that only recently have cases of post-dysenteric

hepatitis been treated thoroughly with this drug, so it is early yet to dogmatize, but the author thinks it will be obvious to any one that a great advance will have been made in tropical medicine if by any means we can diminish the number of liver abscess cases; and should this prophecy come true, we shall undoubtedly owe a very large debt to Major Rogers for the valuable work he has done and is doing on this subject.

A NEW AND MORE RATIONAL METHOD OF TREATMENT OF LEUKEMIA BY THE X-RAY.

STENGEL and PANCOAST in the *Journal of the American Medical Association* of April 25, 1908, published a long paper on this topic. Their conclusions are as follows:

1. The primary results of this method are equally as good as those of the one hitherto employed.

2. The treatment suggested is more rational because it is directed against the primary focus of the disease, so far as it is known, and not against a secondary manifestation.

3. Toxemia resulting from the treatment may be avoided, and the patient's general condition is, on the whole, better from the start.

4. Under exposures to the bone-marrow the enlarged spleen is diminished in size just as it is under direct splenic applications, only the process is somewhat slower.

5. Although this treatment requires a much longer period of time, the misleading tendency of a comparatively quick symptomatic cure, such as follows direct splenic exposures, is avoided. Applications confined mainly to the spleen reduce the size of that organ, destroy the leucocytes in the circulation, including the myelocytes, and possibly have some inhibitory influence, secondarily, on the cause and hold the disease in check, leading to an impression that the patient is cured, whereas statistics show that this is seldom the case. Applications to the bone-marrow also reduce the size of the spleen and destroy the leucocytes circulating in the blood, but in addition they

are more likely to reach and remove the cause of the disease.

6. The spleen should be exposed at some time, but never until it is considerably reduced in size and the patient's general condition is markedly improved, and even then it should be done with caution.

7. The comparatively slow reduction in the size of the spleen, while it is not being directly treated, may be a factor in keeping the leucocyte count high. This is in a measure advantageous, as it guards against stopping the treatment too soon. The count will not become normal while the spleen is still enlarged and is still diminishing in size.

8. That actual destruction of the splenic tissue results from the cumulative effect of direct x-ray exposures is, in a measure, disproved by the following observations:

- (a) The spleen is diminished in size by application to the bones alone.

- (b) In all of our cases which have reacted favorably to the treatment, it has been noted that after the spleen had been included in the applications, the first or second exposure in each series is usually followed by a decided rise in the count, associated very often with evidences of more or less diminution in the size of the tumor. A third or fourth exposure usually brings the count down again by a destruction of the lymphocytes in the circulation. These facts would seem to indicate some direct connection between the decrease in the size of the spleen and the increase in leucocytosis and lymphocyte percentage.

- (c) In the first patient seventeen, almost daily, splenic applications of short duration, made before starting the bone-marrow treatment, reduced the leucocyte count from 386,000 to 133,000, with a relative increase in myelocytes from 16 $\frac{2}{3}$ to 25 $\frac{1}{2}$ per cent, but there was comparatively little diminution in the size of the spleen.

- (d) In the two unfavorable cases with acute relapses, repeated direct applications had no effect whatever on the spleen, which continued to grow larger. At the same time the leucocyte count rose rapidly, although the first one or two direct splenic exposures were followed by a decided drop,

which lasted for a day or two only. It may be well to explain that the reason for these direct splenic exposures was the fact that bone-marrow applications had no effect whatever in checking the extremely rapid enlargement of these spleens, and it was hoped that comparatively short and safe direct exposures might have had some influence. So rapid was the enlargement in one of these two cases that death occurred very suddenly, following phenomena which may have been due to a rupture of the spleen.

9. A peculiarity of this treatment is the fact that the patient may feel perfectly well, but still have a moderately high leucocytosis and a comparatively large spleen. In their first case, after 112 treatments during a period of ten months, the count still averages from 75,000 to 100,000, with 3 to 4 per cent of myelocytes, and the spleen is still moderately large, but the patient feels as well as he ever did in his life, and is able to attend to all of his work. He has been in this condition for the past four months. His leucocytosis decreases very slowly, but a slight drop is noted each time a new area is exposed in its turn, as compared to the count at the time of the previous series to the same part. The only explanation for this long-continued high leucocytosis is that in its slow but steady increase in size the spleen, which receives but comparatively few direct exposures, pours out large numbers of lymphocytes into the circulation, where they are destroyed slowly. The presence of 3 to 4 per cent of myelocytes shows that this patient is still far from well.

10. Daily exposures, when not contraindicated, may frequently yield quicker and better results. The slow progress made by the case just mentioned may be accounted for by the fact that he received but three treatments per week, and for a while only two. Their most favorable case was treated daily.

11. All cases will not respond to even this method of treatment. In acute primary attacks and relapses x-ray treatment is perhaps, as a rule, contraindicated.

12. Lymphatic cases also respond well to

this method of treatment. It is advisable to observe the same precautions in regard to applications to the glands as those mentioned in connection with the spleen.

13. Cessation of treatment for long intervals is to be guarded against, especially in the early stages. Even short interruptions are not advisable until the disease is well under control.

14. The proper time to stop treatment is still a somewhat uncertain question. The frequency of the applications should not be lessened until the general condition is normal and the size of the spleen and the leucocyte count nearly so. It would seem wise to stop gradually rather than abruptly.

15. The leucocyte count, *per se*, becomes a matter of minor importance, but the differential count is always one of the important indices to the effect of the treatment. The failure of the count to drop, after the third application in the series to any particular area, to a point as low as or lower than before the first, has been taken of late as an indication to give more than the three customary exposures to that part. As conditions begin to indicate the approach of a cure this tendency of the leucocytosis to increase becomes less marked.

16. The distribution of the applications over almost the entire body renders the risk of a severe dermatitis, with ordinary care, very slight.

17. The bone pains, noted especially in splenomedullary cases, are relieved early by this method of treatment.

THE TREATMENT OF FOUL BREATH.

The *West London Medical Journal* for April, 1908, contains an article by WYLIE on this subject. He states that the successful treatment of fetid breath depends, first, upon a clear recognition of the cause; secondly, on the persistent and thorough employment of the methods adopted; and thirdly, on the intelligent coöperation of the patient. Remedies to overcome fetor must not be taken in hand in a half-hearted manner; they must be persevered with most thoroughly and the patient should be in-

structed in every detail of the technique, whether this includes a douche, spray, or insufflation. A mere temporizing by the use of "deodorizers" only results in disappointment, if the *fons et origo mali* remains untouched.

The first aim of the physician is to discover the cause of the trouble, and the second to remove it. It is not the purpose of the author to discuss all the intricate surgical procedures involved in the alleviation and cure of fetor, but any sinusial disease must be seen to. Any nasal obstruction, whether due to hypertrophy or to new growth, should be removed, so that free drainage and ventilation are established. Any abnormality in deglutition should be corrected. Hasty mastication should be forbidden. When the trouble is of dental origin the aid of the dentist is indispensable and must not be postponed. Hygienic measures should be enforced before and after each meal; the tooth-brush should be thoroughly employed at least twice a day, but especially after the last meal in order to remove the accumulations, which if left *in situ* naturally tend to ferment during the night. The brush should be used with a vertical rotatory movement to sweep the interstices between the teeth. Lacunar accumulations in the lingual or faucial tonsils should be evacuated, any ulcers should be touched with pure phenol, and if extensive keratosis be present, the tonsils should be removed, either "en masse" or "morcellement."

Suppuration of the middle ear must be treated by antiseptic drops; rhinoliths, foreign bodies in the nose, pharynx, or larynx must be removed. Causes, whether following the use of drugs, or those which are dependent upon occupations, or upon diet, must be attended to, and constitutional and gastrointestinal diseases must be thoroughly treated.

The chief aim in overcoming foul breath is to treat and remove the immediate cause, which, we have seen, is usually bacterial in origin, whether primary or secondary. With the object of clearing away fetid accumulations in the nose and nasopharynx, "solvent" douches must be employed. It

is useless merely to employ antiseptics, which do not possess the power of dissolving mucin, albumen, and the constituents of crusts. The best ordinary solvent is sodium sulphate (1-per-cent solution) or sodium baborate or carbonate (in 0.5-per-cent solution). The nose should be thoroughly douched with this until the breath-way is free from crusts and caseous matter. Antiseptics can be employed afterward direct to the membrane by means of sprays. In mild cases, when the fetor is not severe, and when the mucous membrane is still sensitive, the olfactory function not being destroyed, an atomizer of liquid paraffin containing menthol, oil of cinnamon, or eucalyptus is preferable, but if the fetor be very intense, Dobell's solution of phenol may be sparingly used.

We must next restore a healthy secretion by gentle stimulation. This can be done in mild cases by using a snuff composed of boracic acid with attar of roses, but when the disease is atrophic in type and secretion scanty, five per cent of lysoform should be added as a powerful stimulant and antiseptic. It need scarcely be added that intranasal douching should be employed with the greatest care and not persisted in for too long a period, owing to the danger of infecting the middle ear through the Eustachian tube. Severe cases of atrophic rhinitis are very tolerant of douches, and require such treatment at frequent intervals. Sea water, boiled and decanted, forms an excellent douche, especially when combined with a visit to the sea air. The nasal and pharyngeal mucous membranes, except in cases of atrophic rhinitis, are very sensitive, and will not tolerate antiseptic solutions of anything like the strength and intensity which the mouth does. Densely hard crusts are painlessly removed by inhalation of steam, camphor being added to the hot water as a stimulant. To facilitate oral hygiene solutions of lysoform (one per cent), sanitas, peroxide of hydrogen, etc., are most beneficial; permanganate of zinc (1 in 500) or zinc chloride ($\frac{1}{2}$ per cent) is recommended in cases of "spongy gums."

Lozenges containing formic aldehyde should be used frequently; they are non-

poisonous, and act as powerful deodorants and antiseptics.

It is important in many cases of subjective foul breath, such as ozena, etc., to get your patient's confidence by reducing at least, if not overcoming, the fetor. With the help of a snuff composed of lysoform, boracic acid, and attar of roses, the unhappy sufferer from ozena may often be rendered fit for the society of his fellow men and enjoy life.

The treatment of such conditions as bronchiectasis, pulmonary gangrene, gastrointestinal and other diseases causing fetor of the breath fall under the province of the general physician, and is beyond the scope of this paper.

THE VARIETIES OF TUBERCULIN.

Under this title the *Lancet* of March 14, 1908, says that the number of preparations made from tubercle bacilli and administered under the name of tuberculin, with or without certain descriptive letters, has increased to such an extent that considerable confusion exists in the literature of the subject. It is of the utmost importance that the practitioner should know which form he is giving and the general nature or the particular processes by which it has been obtained. The preparations which are best known in England are, first, Koch's old tuberculin, which is sometimes referred to as tuberculinum Kochi; secondly, Koch's new tuberculin, or tuberculin T. R.; thirdly, Bacillen-emulsion, or emulsion of bacilli; fourthly, pulverized tubercle bacilli; and lastly, the recently introduced Calmette's tuberculin-ophthalmic reagent. The old tuberculin is prepared from four- to six-weeks-old glycerin broth cultures of tubercle bacilli boiled for an hour, evaporated down to one-tenth, and then filtered so as to remove the bacilli themselves. The new tuberculin (tuberculin T. R.) is prepared by drying living virulent cultures *in vacuo*, grinding them up into a very fine dust, and after extracting certain soluble constituents with saline solution the residue is rubbed up with water to form an emulsion. "Bacillen-

emulsion" is prepared from pulverized bacilli, without previous extraction with water, equal parts of glycerin being added, so that one cubic centimeter contains five milligrammes of bacillary substance. Pulverized tubercle bacilli are used for making emulsions for opsonic and other tests. Calmette's reagent is a solution in sterilized water of the precipitate obtained from old tuberculin by alcohol, so as to obtain a solution free from glycerin. Other preparations which have been tried comprise Klebs's tuberculocidin and antiphthisin, Hirschfelder's oxy-tuberculin, Hahn's tuberculo-plasm, Bera-neck's tuberculin, Landmann's tuberculol, Maragliano's water extract, and Denys's tuberculin B. F. (bouillon filtre), while Spengler writes favorably of a filtered bouillon from bovine bacilli described as P. T. O. (Perlsucht-tuberculin-original).

A small pamphlet has been published by Messrs. Meister, Lucius, and Brüning, of Hoechst o. M. and London, entitled "New Tubercle Bacilli Preparations," in which some valuable information is given in regard to the nature and use of many of the more important preparations, including some of comparatively recent introduction. Among these may be mentioned T. O. A. (tuberculin-original-alt), which appears to correspond to Denys's bouillon filtre; P. T. O., a similar preparation from bovine bacilli, to which reference has already been made; vacuum tuberculin and bovine vacuum tuberculin, which differ from the old tuberculin in the avoidance of high temperature in their preparation. All of these substances are prepared by filtration and are thus free from bacilli. A form of tuberculin adapted for the Calmette ophthalmic reaction is also described under the name of "Tuberculosis-diagnostic Hoechst." This is 0.1-per-cent solution of a glycerin-free desiccated tuberculin, and is thus only one-tenth of the strength of that originally employed by Calmette. Tuberculin T. R., Bacillen-emulsion, new bovine tuberculin (tuberculin P. T. R.), and bovine tubercle bacilli emulsion are also referred to, while the preparations of dilutions and the dosage and methods of administration are de-

scribed. It may here be said that the doses recommended are in most cases larger than are usually advised in this country, especially since the work of Wright and Bulloch upon the administration of tuberculin controlled by determination of the opsonic index. The pamphlet is likely to be useful in indicating the nature of some of the forms of tuberculin at present on the market, though in this respect it would be improved by further details in regard to the preparation of some of them, and by an indication that smaller doses, calculated to produce an effect upon the protective mechanisms of the body without producing disturbance of the body temperature, are recommended by some authorities.

It cannot be too strongly urged that in using tuberculin of any form, either as a diagnostic or as a therapeutic measure, the practitioner should be quite clear in his mind as to the exact action of the preparation which he decides to employ and as to the indications for its administration. Tuberculin is in many forms very potent, and is obviously not to be administered indiscriminately to cases of tuberculous disease, at any rate until our knowledge of its effects is much greater than at present.

THE USE OF FAT-FREE MILK IN INFANT FEEDING.

TOWNSEND in the *Boston Medical and Surgical Journal* of March 19, 1908, writes on this topic. He points out that milk that is practically fat-free can be obtained only by the centrifugal process. This contains less than one-half of one per cent of fat. In private practice, where this is not so easily procured, the author has used with satisfaction milk from which all the cream was removed by means of the Chapin dipper or by the siphon. This milk, however, contains one per cent or more of fat, and is to that extent liable to occasion trouble in a susceptible case. In mild cases of gastrointestinal disturbance the author has found that a moderate diminution in the amount of fat is often all that is necessary. This can be obtained by using whole milk instead of cream

in the mixture, or by using milk from which the top few ounces have been poured off.

The ease with which the proteids appear to be digested by even young infants is certainly interesting and suggestive.

An infant fed on too low proteids is at a disadvantage, as shown by anemia, slowness in gaining weight, fretfulness, a tendency to intestinal indigestion and to infection. Yet many infants are condemned to their low proteid diet on account of the difficulty they have of digesting, not the proteids but the fats that go with them. The use of dilutions or modifications of weak creams instead of the strong creams, so commonly advised, and the earlier recourse to undiluted cow's milk, would, in the light of these studies, appear to be a more rational procedure.

Exact imitation of the percentages in woman's milk is far from being the solution of infant feeding. We must take heed lest we worship the fetish of percentage feeding too blindly, for no matter how cleverly we calculate the fractions, or how nicely we split the proteids, the resulting mixture is still cow's milk and not woman's milk.

In conclusion, as a result of these preliminary studies, it may be said: (1) While fat is very necessary to the normal infant, it is more often given in excess than is generally supposed. (2) Excess of fat may cause one or more of a number of symptoms, as, for example, constipation, white and "curdy" stools, a ravenous appetite with atrophy, and convulsions.

THE TREATMENT OF ECZEMA IN INFANTS AND YOUNG CHILDREN.

The *New York Medical Journal* of March 21, 1908, contains an article by WINFIELD on this topic.

The external treatment should be protective; the cardinal principle is not to apply anything to the skin that will irritate it, so therefore all ointments, lotions, or powders should be bland and protective.

All scales and crusts must be removed before any medicinal application is used; the scales can be softened with olive or almond oil, to which can be added one to three

grains of resorcin or carbolic acid to the ounce. The oil can be used for a few days or until the scales are softened, then the parts should be thoroughly washed with soap and bran water, or water to which a small quantity of sodium bicarbonate has been added; the washing should be repeated as often as is necessary. During the interval between the water baths the parts can be cleansed with oil.

For the erythematous type, where there is little or no vesiculation, the application of some simple protective ointment, such as cold cream, petrolatum, or wool-fat, will be all that is necessary; the petrolatum should be the refined white petrolatum, and it is not prescribed with an idea of a medicinal effect, but as a simple protective covering for the skin.

If the child is much exposed to the outer air it is sometimes advisable to cover the unguent with some bland dusting powder.

In eczema rubrum, if there is not much inflammation, benefit can be derived from dusting the diseased part with zinc oxide or bismuth, either separate or combined. If the diseased surface is much irritated and inflamed a mild boric acid lotion can be used until the inflammation subsides, and then an ointment composed of zinc oxide, ammoniated mercury, and cold cream will be found useful.

The physician is cautioned against prescribing the commercial zinc oxide ointment, as it is either too strong for the individual case, or the fatty base has become rancid. Cold cream is a much better ointment base than benzoated lard. While it is not the purpose of the paper to give any prescription, the following combination will serve as an example of prescriptions when used:

Ammoniated mercury, 10 to 15 grains;
Zinc oxide, 10 to 25 grains;
Cold cream, 1 ounce.

M. S.: Externally.

If there is much pruritus carbolic acid or some tar preparation can be combined. If the disease has become chronic oil of cade or beta-naphthol in from ten to thirty grains to the ounce of an ointment will assist the cure. In prescribing the tar preparations

physicians should use discriminating judgment, for the tars do not act well in all cases—in fact, they frequently aggravate the existing inflammation, and sometimes produce a tar dermatitis. Occasionally cases of eczema resent any fatty applications; then lotions, such as the calamine lotion, must be resorted to.

INDICATIONS FOR ARTIFICIAL ABORTION IN THE FIRST THREE MONTHS OF PREGNANCY.

In the course of an article on this topic in the *New York State Journal of Medicine* for March, 1908, JEWETT says of the toxemia of pregnancy that the indication relates essentially to pernicious vomiting. Eclampsia the writer has never observed in the first three months. In hyperemesis with marked and progressive exhaustion, especially as indicated by weekly loss of weight, when the usual dietetic and medicinal measures have failed, no time should be lost in emptying the uterus. Serious complications, advanced cardiac disease and certain others, emphasize the necessity for intervention.

In hyperemesis it is better to interfere too early than too late. Under the combined effects of toxins and starvation the woman's strength fails insidiously and often the end comes abruptly. Lives are lost by too long delay. The indication is to be based more upon the general condition of the patient than upon the nitrogen distribution in the urinary compounds. Yet the latter when disturbed, as Ewing and Wolf have said, affords "a readily accessible sign of a very unstable condition of the organism," and a high percentage of ammonia, more than double the normal, should have weight.

It is difficult to understand the attitude of certain European writers on the question of interrupting pregnancy in hyperemesis. Pollak would intervene only when the patient becomes emaciated, fever sets in, and the clinical picture is alarming. If patients are permitted to reach this condition many will be lost in spite of abortion.

A. Martin has operated in only two cases,

and in those because they were complicated with pulmonary tuberculosis. Backhaus believes that hyperemesis can be treated successfully without arresting the pregnancy. Salowgiff, Barsony, Wright, Zaborsky, Dorff, Fasius, and Frank, all condemn the interruption of pregnancy in pernicious vomiting. As to pulmonary tuberculosis, Jewett says that except in localized processes and in the fibroid type of phthisis the influence of pregnancy generally is bad. The disease often pursues a more active course in advanced gestation. Respiration is more or less crippled in the later months, and the infection is prone to extend with renewed virulence during the puerperium and lactation. In light and incipient tuberculosis little or no harm can come from the early termination of pregnancy, and often the course of the disease may be retarded thereby. The indication would seem plain when the disease grows worse upon the onset of pregnancy. In the severer types of the disease interference usually will do no good.

With reference to the influence of pregnancy upon pulmonary tuberculosis, however, obstetric opinion is divided. Pinard is totally opposed to the interruption of pregnancy in tuberculous women. While he grants that the disease may be aggravated by gestation, he declares that it is not retarded by abortion. His advice is to treat the tuberculosis and watch the pregnancy.

Veit would be governed more by the individual condition than by the fact that the woman has tuberculosis. He adopts as the main clinical guide the gain or loss of body weight. A steady gain is proof that the disease is not seriously complicated by pregnancy; on the other hand, in progressive emaciation nothing is to be gained by abortion—it is too late to interfere. In certain instances between these two extremes, in which the gain is irregular or insignificant, abortion may offer some hope of prolonging life.

Burkhardt thinks that intervention at any stage may act injuriously, yet he grants that it may sometimes be permissible in the very early months, especially in cases complicated with hyperemesis.

Löhnberg opposes the interruption of pregnancy in tuberculosis, whether pulmonary or laryngeal, on the ground that abortion is permissible only as a life-saving measure, and not for the mere purpose of ameliorating the woman's condition.

Cohnstein, Hoerder, McCann, Kleinwächter, Jacob, Ahlfeld, Fritsch, and others would operate only on special indications. Tuberculosis, they hold, does not of itself call for abortion as a routine practice.

ON THE EXCRETION OF UROTROPIN IN THE BILE AND PANCREATIC JUICE.

The *Johns Hopkins Hospital Bulletin* for March, 1908, contains a report by CROWE of the results of a series of experiments made to determine the fate of urotropin in the body and its efficacy as a sterilizing agent in the bile and other secretions of the body.

It was determined by experiments on dogs that after the administration of urotropin by mouth it was excreted both in the bile and pancreatic juice.

Hehner's test for formaldehyde was used, and by rough colorimetric comparison it was estimated to be equivalent to a 1:12,000 solution of formaldehyde. It was present in the bile contained in the gall-bladder twenty-four hours after giving 15 grains of urotropin by mouth.

In view of these findings, observations were made on a series of patients in the hospital who had biliary fistulæ. Bacteriological studies were made before and after giving the drug; and in every case the infecting organisms rapidly disappeared when the dose of urotropin given was 75 grains or more a day. As in the urinary bladder, the organisms appear again as the dose is increased.

The bile discharged through the fistula, when acidified and distilled, always gives the test for formaldehyde, the amount present varying with the amount of urotropin given.

In every case the patient's general condition is improved, the discharged bile changed from a dirty, turbid fluid to the

golden-yellow of normal bile, and the fistulæ closed rapidly.

Urotropin was shown to be present repeatedly in the cerebrospinal fluid, even after very small doses by the mouth. In one case with a badly infected cerebrospinal fistula, with sloughing and a purulent discharge, the organisms gradually disappeared after urotropin was begun, the fistula closed, and the patient made a good recovery.

Formaldehyde was shown to be present also in the pus obtained from a gonorrheal knee-joint; but sufficient time has not as yet elapsed to report on its therapeutic effect in this case.

TREATMENT OF SUMMER DIARRHEA IN CHILDREN.

COLE, writing in the *Intercolonial Medical Journal of Australasia* of January 20, 1908, tells us that he stops milk absolutely in any form for several days and substitutes cool, clean water to relieve thirst, diminish irritation, and lessen pabulum for germs. At the end of twenty-four hours he allows barley- or rice-water. If vomiting is present he gives 1 to 2 grains of calomel in 1/10 grain doses every half-hour; if no vomiting, a large teaspoonful of castor oil. If vomiting persists, the stomach is at once irrigated. Irrigation of the bowel is done immediately and thoroughly, and repeated in twelve or twenty-four hours. The temperature of the water used should vary from 70° to 110° according to the amount of fever present. These combined methods tend to make the alimentary canal a much poorer culture field.

Laxative treatment, and not astringent, should be continued for two or three days longer if the temperature be raised, to still further get rid of the products of fermentation and putrefaction. He relies mostly on 8- to 10-minim doses of castor oil, given every four hours, in form of emulsion. If tenesmus be present, small doses of opium in tincture form may be added to larger doses, say 15 minims, of castor oil.

At the end of forty-eight hours the diet of water and albumen-water may be altered by stopping the latter and by adding mutton- or chicken-tea (boiled with rice, barley, or

sage, and strained carefully), and twenty-four hours later whey (preferably made from junket) and meat juice may be given. He still withholds milk, and gives next a converted starch food or biscuit with water.

By this time many cases are so much improved that the restoration to a stronger diet is easily accomplished. On the other hand, the greatest difficulty is often experienced at this stage—the getting back to a diet that will be tolerated, and that will satisfy, sustain, and nourish, and that will not bring about a reinfection.

The writer favors now an almost cream-free diluted milk, with the useful modification by Benger's food, or condensed milk in the strength of 1 to 60 for a start. Later cream may be added. While introducing milk in this way, he continues to give the emulsion of castor oil as before.

During the whole of this time, night and day as far as possible, he insists on the baby being kept in the open air. Frequent cool, not cold, spongings, and methylated spirit compresses for the abdomen, lower the temperature and promote comfort.

Efficient help and hearty coöperation are factors upon which much depends, for much remains to be done. Cleanliness of food and feeding appliances, the removal and disinfection of napkins, suitable light clothing, and careful nursing are essentials in the management.

The author supplements this brief sketch with some general remarks on forms of treatment.

1. *Hydrotherapy*.—(a) External, in the form of lukewarm baths and spongings, needs only to be mentioned as invaluable and necessary. (b) Internal: Gastric lavage is rarely done at the commencement of these cases, but is, in the author's opinion, the best treatment; it is less distressing than forcible emesis. It removes remnants of food and toxins, and has rarely to be done a second time. He prefers normal saline solution for the purpose.

Rectal and colonic lavage is of especial value where the condition is largely one of colitis. It is somewhat difficult to do thoroughly if much tenesmus be present. If

successful, however, it lessens the tenesmus, removes irritant and toxic substances, and it stimulates the small intestine to evacuate its contents. It likewise stimulates the excretory action of the kidneys, and has, as a rule, a soothing effect on the nervous system, the child sleeping peacefully for hours afterward. It may be repeated once or even twice daily for two, three, or four days.

2. *Drugs*.—The writer is strongly of opinion that the treatment by drugs in the early stages must be eliminative in character. A large dose of castor oil, 3j to 3ij, in the non-vomiting cases is his method, followed by 8- to 10-minim doses in the form of emulsion.

Calomel is best (if vomiting) in frequent small doses, till 2 grains be given.

Small doses of sodium or magnesium sulphate are very useful, if there be no collapse or absorption of much tissue fluid, to keep the intestinal canal clear.

The mixture of rhubarb and soda is efficient, but nauseous.

Opium—to combat the constant, forcibly-expelled, watery evacuations of colitis—is of great service, especially if there be much tenesmus. It forms a capital combination given with castor oil in the form of emulsion.

Bismuth is frequently productive of great harm. Its indiscriminate use is to be deprecated in strong terms. Particularly is it contraindicated when the temperature is high and the motions foul. A little later, given in 10-grain doses every three hours to a child one year old, it may do great good by checking vomiting; but if not effective after six or eight doses, it should be discontinued.

Acid mixtures with astringents are helpful only in the later stages of a few cases. They are best given with opium.

The author finds very little use for the antiseptics—salol, resorcin, naphthol, carbolic acid—but mercury bichloride is good, and may be added to the emulsion of castor oil.

Alcohol in acute gastroenteric conditions is to be avoided. It is irritant to both stomach and kidneys.

In extreme conditions, where heart stimulants are called for, strychnine is valuable, while applied heat and the subcutaneous injection of fresh sterile saline solution are of the first importance.

POSTOPERATIVE TREATMENT OF ADENOID PATIENTS.

SHEEDY in the *American Journal of Surgery* for March, 1908, in writing on this subject says that the important point about the application of an oil solution is that it be free from irritating properties. Most of the preparations prescribed irritate the nasal mucous membrane, and in the course of a few hours after their use the patients give evidences of an acute coryza. The base of nearly all oily solutions used by our present-day laryngologists is petroleum, and the author considers it a much better base than olive oil, which is occasionally suggested. The latter becomes rancid so quickly that only a very small quantity can be prepared at a time. In connection with the petroleum base, one should see that all impurities are removed. This is not always easy, as the doubly refined oil is much more expensive than the oil containing irritating minerals, and therefore there is a temptation to substitution.

The remedial ingredients used in nearly all oil solutions are menthol, camphor, oil of eucalyptus, oil of cinnamon, pine-needle oil, etc. About one patient in every hundred has an idiosyncrasy which manifests itself when the oil of eucalyptus is used. This should be kept in mind. In prescribing the oil of eucalyptus one should be sure that oil obtained from the *Eucalyptus globulus* tree only is used. It is well known that most of our oil of eucalyptus comes from California and Australia. In California there are about 200 varieties of the tree, and in Australia about 300. In California, men, women, and children gather the leaves from this large variety of trees and take them to the still, and the oil of the mixed trees is the result. This mixed oil is very irritating if used in sufficient quantities for remedial effect on the nasal mucous membrane. Therefore one

should insist upon the oil obtained from the *Eucalyptus globulus* tree, used in filling prescriptions, and that oil should have gone through a third distillation.

Another important ingredient that the author uses in all his oil solutions for mucous membrane medication is the oil of Ceylon cinnamon. It is a very important addition to all menthol oily sprays; without it the preparations have little effect upon the congested condition so often found in the so-called catarrhal states of the mucous membrane of the nose and throat. The oil of cinnamon should be that obtained from the root and bark of the Ceylon cinnamon tree, as the oil obtained from the leaves is very irritating and without remedial effect. Unfortunately for the general user of these preparations, oil of cinnamon from the leaves can be obtained at a very small price, while the oil of cinnamon from the root and bark of the Ceylon variety is very expensive.

On account of the great difficulty in securing oil of Ceylon cinnamon and oil of eucalyptus globulus, triple distilled, when prescribed, the author has for a number of years used a menthol oil solution, made up as follows:

Menthol,
Camphor, āā grs. v;
Oil of pine-needle, min. x;
Oil of Ceylon cinnamon, min. ij;
Oil of eucalyptus globulus, min. v;
Triple distilled petrolatum, q. s.

The great temptation to substitute cheaper oils in place of those prescribed, and the uniform irritation following the use of the prescription as ordinarily filled, has caused the writer to depend upon the above combination in his nose and throat work where an oil is indicated. He advises patients when postnasal medication is indicated to nebulize the preparation into the mouth, instructing them to exhale through the nose, thus securing a uniform application of the preparation to the whole nasopharyngeal space. The mucous membrane regenerates in from two to six weeks, so that these patients should be kept on one of the cleansing solutions and the oil spray until all crusts and accumulations disappear from the throat.

The general physical condition that we find in patients suffering from the so-called "lymphoid diathesis," namely, a lack of the bone and blood elements necessary to the well developed child, should have our attention. Treatment should be directed toward the reconstruction and regeneration of the structures. In all patients suffering from lymphoid tissue hypertrophy, whether young or old, we have no remedy equal to iodine and phosphorus. We must, however, avoid iodide of potash in young children as we find it irritating to mucous membranes. As the taste is also disagreeable, we have trouble in securing the coöperation of our little patients in this line of medication. The only patients that we should insist upon using iodide of potash are those suffering from syphilis.

Iodine and phosphorus as found in the extract of cod-liver oil is by far the best form in which to use these preparations, and it is the practice of the writer to put all of these patients, whether old or young, on this remedy. Here again it is absolutely essential to secure an extract of the oil made by a reputable house. With this he combines the syrup of hypophosphites, iron, lime, magnesia, and malt extract with sufficient flavoring to make the combination palatable and agreeable to children. In this preparation we have an ideal tonic and reconstructive.

This treatment should be kept up until the condition of affairs which first induced the nasal catarrh and lymphoid diathesis and adenoid hypertrophy is changed. The question of fresh air in sleeping-rooms, overcrowding of schools, active games in the open air, suitable food and clothing, and especially warm hands and feet, must have most careful attention. These children must be reëducated in the matter of proper nasal respiration. Patients are kept on this medication until all evidences of malnutrition and improper development have disappeared. Combined with this treatment the author insists upon the patient taking at least one quart of good rich milk daily in addition to the regular diet.

Another point he insists on is that all

these mouth-breathers shall be put through a course of thorough gymnastics. Deep nasal breathing with the mouth closed for a few minutes at a time eight to ten times a day will do much to develop air spaces in the bones of these patients who have been mouth-breathers during the developing period of their existence. His effort, therefore, is to develop these cavities so far as possible by directing the patients to take a gymnastic course, impressing upon them the necessity for expiration through the nasal cavities. He makes a point of this because a great many text-books emphasize the necessity of inspiration through the nose without mentioning the importance of expiration through the same channels.

If, as often happens, the mouth drops open during sleep, even after all obstructions have been removed, he makes it a rule to keep the lips closed by applying strips of adhesive plaster over the mouth at bedtime.

In conclusion the author sums up the following points to be kept in mind in connection with the postoperative treatment of adenoids:

1. Keep children in bed for from two to three days after operation, and away from other children.
2. Keep parts clean by use of alkaline washes and medicated mentholated oil solution.
3. Use constitutional and reconstructive medication.
4. See that thoracic gymnastics are practiced for a long period.
5. Oxide of zinc plaster over the mouth at night to keep the mouth closed until normal breathing is established.
6. Watch for return of the growths.

IODINE IN TREATMENT OF ULCERS.

In the *Journal of the American Medical Association* of May 30, 1908, Roop has this to say about the use of iodine. About two years ago he began using iodine for ulcers by painting the skin up to the edge of the ulcer. This produced such good results that he ventured to use it on the surface of the ulcer itself. The effect has been excel-

lent. He has found this application of iodine a very efficient means of converting a septic ulcer into a clean, granulating wound which heals readily. He uses it in a concentrated form or a saturated solution in alcohol, and applies it every day, or as often as is required, until the slough separates; when an ordinary dusting powder and gauze may be applied. The iodine should then be discontinued, but if any unhealthy or superfluous granulations appear, it should be again applied. It quickly changes a phagedenic ulceration into a healthy condition. He has used it in many forms of mouth and throat troubles by painting it over the surface. It will arrest and cure pyorrhea alveolaris. He suggests the free use of it in cancrum oris. The application is usually painless. It is extremely serviceable in infected wounds.

THE CUTANEOUS TUBERCULIN REACTION.

WARFIELD in the *Interstate Medical Journal* for March, 1908, writes entertainingly on this topic and tells us that his procedure is as follows: The skin of the upper arm, in a place free from hairs, is washed with alcohol and allowed to dry. On two places situated about three inches apart is dropped from a sterilized hypodermic syringe one drop of a 25-per-cent solution of Koch's old tuberculin. (The syringe is used instead of a dropper on account of the small size of the drop and the ease in getting just one drop.) The skin between the drops is then scarified with the lance by turning it to and fro, and then through the drops the scarification is done. After one or two minutes the tuberculin is mopped up. No dressing is necessary. The scarification must not draw blood. Should the faintest reaction occur it is easily seen by comparing it with the central control spot.

One may say that many apparently healthy people react to the test, hence its value is limited. One may reply that a positive Widal test does not always show active typhoid fever, nor does the demonstration of diphtheria bacilli in the throat always mean that the patient has diphtheria.

Even the finding of tubercle bacilli in the sputum may not mean active tuberculosis of the lungs. No one test makes a diagnosis. The difficulty attending the attempts to use the laboratory as a final court of appeal is known to all. This cutaneous reaction shows tuberculosis at the time or previously. Of that the author does not believe there can be much doubt, but the diagnosis is not to rest on this one test alone. Von Pirquet finds that if there is only a caseated gland or a calcified nodule at an apex, that the reaction followed vaccination. Cachectic cases, cases of miliary tuberculosis, and lethal cases of tuberculous meningitis do not react to injections of tuberculin always. The reacting power of the body seems to be benumbed, the organism is already overwhelmed with the toxin, and the cells can produce no more receptors.

Therefore it is no argument to say that because well persons react the test is of no value. In the author's opinion it is the negative reaction that is the most valuable. Given a case in which there are no evidences of activity of the tubercle bacilli and careful physical examination reveals no lesion, he does not believe that it shows active lesions. But what the positive reaction does call attention to is the great probability that these cases if neglected will develop active tuberculosis. Of course only time will prove this belief. Again, in a case that seems to be one of incipient tuberculosis, but after frequent examinations and careful observation there is still some doubt, the positive reaction means, in the author's opinion, the extreme probability that the case is tuberculous, and he treats it as such. Such cases if treated energetically get well. The positive reaction is just another link in the chain of evidence. Such cases would undoubtedly react to injection of tuberculin. However, there is always a slight element of danger connected with the injection of tuberculin, and moreover to give properly such injections requires that the patient be in bed or where he can be watched, and that his temperature be carefully taken. This is not always feasible except in a sanatorium. In the cutaneous test there is no discomfort,

no constitutional disturbance. It is absolutely harmless. Further work by many observers must be done before we can place it alongside of the Widal reaction, for example, but enough has already been done to convince one at least of the value of the test in children and adults.

The author's conclusions may be summed up as follows:

1. The cutaneous tuberculin reaction of von Pirquet is a perfectly harmless procedure.
2. All adults do not react to the vaccination.
3. It is of value in the so-called pre-tuberculous stage.
4. The negative reaction precludes tuberculosis so far as we can be sure of the results of any one test.
5. A positive reaction does not always mean active tuberculosis. It may mean a healed lesion somewhere in the body, but it calls attention to the possibility of later tuberculosis. It also draws attention to the probable tuberculous nature of the case, and a more careful examination of the patient will sometimes reveal the previously overlooked lesion.

PERTUSSIS: A NEW METHOD OF TREATMENT, WITH REPORT OF CASES.

FENDLER in the *American Journal of Obstetrics* for June, 1908, reminds us of the obvious fact that anything that will help us with the treatment of pertussis is a valuable aid to our therapy. It has been discovered by Koplik that the disease is caused by a specific bacterial agent, a short bacillus, which finds lodgment in the upper respiratory tract, and is found in the mucus expelled at the end of a typical paroxysm in the early part of the disease before bronchitis is present.

The spasmodic attacks are reflex in character, the origin of the reflex being an irritation in the mucous membrane of the larynx. In this respect the attacks are similar to other reflex laryngeal spasms.

The medical treatment of pertussis in the hands of most practitioners is limited to the

administration of antipyrin. After a conscientious trial of all the known so-called remedies, the writer limits her practice to an antipyrin and sodium bromide mixture, alternating in some cases with bromoform, and in all cases the giving of Dover's powder at night. This form of internal medication has been about as successful in her hands as any of these cases generally are.

Case 1.—On May 10, last year, a little girl of eleven months was brought to the writer with symptoms of an ordinary cold. After three days' treatment, the cough gradually increasing in intensity and occurring in paroxysms, a diagnosis of the catarrhal stage of pertussis was made and the usual treatment adopted. At the end of the week the child developed the "whoop" which marks the spasmodic stage. After three days, the spells increasing in number and intensity despite all treatment, at the request of Dr. Sidney Yankauer, the writer discontinued her medication and tried an injection of a two-per-cent solution of antipyrin into the larynx with phenomenal success.

May 20, at noon, ten drops was injected. The child did not cough until 9 P.M., when she coughed heavily, and had attacks of coughing and whooping until noon of the 21st, when an injection of twelve drops was given; she did not then cough until 8 P.M., and after that she coughed intermittently until noon of the 22d, when fifteen drops was injected. She then did not cough until midnight, when she had one spell, but no further coughing until 10.15 of the next day. At noon another injection of fifteen drops was given, and the child was then injected every other day until June 1, when the cough apparently ceased. On June 8 the mother brought the child to the author's office, saying that for the two previous nights she had had spells of about six coughs; no whooping or vomiting, however. Twenty drops of the solution was injected, and the mother was instructed that if the child coughed again she was to be brought back to the office. She did not return.

Case 2.—This child, as far as the writer could learn, had entered the spasmodic stage about a week before she was brought to her,

August 10, 1907. The severity of the spells in this case was most marked, the child becoming almost lifeless several times in twenty-four hours. The author injected from twenty to twenty-five drops of the two-per-cent solution every day for thirteen days, when the cough ceased entirely.

For Case 3 the writer is indebted to Dr. Henry Heiman, who kindly sent it to her, December 20, 1907. The child, aged six months, had been coughing for about three weeks, and whooping for several days. She injected each day, increasing gradually, from ten to twenty-five drops, when at the end of the week the cough entirely ceased.

The writer wishes to call attention to the fact that the first case was apparently cured in nine, and positively in seventeen, days from the beginning of the spasmodic stage.

The second was cured after thirteen days of the treatment.

The third case was cured in one week.

In none of these cases did the bronchitis, which is so frequently a sequela of pertussis, follow, and in all cases the child had had up to the day of the first injection, between the hours of noon and bedtime, anywhere from six to ten attacks of coughing, whooping, and vomiting; and from the day the first injection was made, as the histories of these cases show, immunity was obtained during six hours, and the mothers assured the writer that the spells were less in number and severity during the night and morning following.

With regard to the mode of administration, the author's method is to place the child upright on the mother's lap, the head resting upon her chest. With one hand the mother firmly secures the hands of the child, with the other she steadies the head. The operator's hands being free, the tongue is lowered with a depressor in the left hand; with the right the injection is made by means of the glass instillation tube devised by Dr. Yankauer. The tube containing the solution is passed backward behind the uvula and the fluid quickly injected into the larynx.

Local application, as we all know, into the larynx of a child requires the skill of an ex-

pert, and even in such hands is attended with so much difficulty as to make success questionable. As a natural consequence such applications are not efficient, and their use has been practically abandoned.

The laryngeal medicator used in the treatment of the author's cases seems to make it possible for any one to easily inject fluid into the larynx.

SHEFFIELD in the same journal says that as soon as the diagnosis has been established with any fair degree of certainty (even earlier where direct infection is demonstrable), the patient should be isolated and the expectoration disinfected. For the latter purpose a sputum cup is very helpful. Isolation should be practiced principally during the expectorating period—at least three weeks.

Fresh air being the most essential and efficient therapeutic measure, the child should, except in the presence of grave complications, be kept outdoors the greater part of the day, and the rooms constantly aired with the patient indoors. Whenever possible, two or more rooms should be made use of. The food should be bland and strengthening, and given in small amounts, preferably after paroxysms. The clothing should correspond with the season of the year. We possess no ideal specific against the disease, but a great deal can be done to lessen the number and severity of the paroxysms by resorting to the following medicinal agents:

℞ Olei eucalypti, ʒiv;
Tinct. benzoini comp., q. s. ad fʒij.

M. Sig.: ʒj in a pint of hot water to be used for inhalation through a croup kettle three times a day.

℞ Extr. belladonnæ, gtt. iv;
Vini ipecacuanhæ, gtt. xvj;
Sodii bromidi, gr. xvj;
Syr. amygdalæ, q. s. ad fʒij.

M. Sig.: ʒj every two to four hours, according to the severity of the paroxysms, for a child two years old.

Whenever necessary a small dose of some morphine preparation may be administered to induce rest or sleep, and when the heart is weak a fresh infusion of digitalis will prove a useful addition. Numerous other remedies have been found serviceable, but

caution is recommended in their promiscuous use. The author refers especially to the coal-tar products and the newer proprietary preparations, such as antipyrin, bromoform, pertussin, and the like. Complications should be treated according to indications.

The paroxysms may frequently be controlled by pulling the lower jaw downward and forward. This manipulation is contraindicated only in the presence of food in the mouth or esophagus. Intensely spasmodic attacks may be relieved by the inhalation of chloroform.

THE USE FOR THE GOAT.

The *Lancet* of February 29, 1908, asks for the more extended recognition of the value of the goat to the community, largely on the ground of the quality and purity of the milk which she produces. It shows how easily anybody with no more accommodation than a back yard in the suburbs can become a keeper of live stock which will make him independent of the dairyman, provided that he adheres to a few essential canons of goat-keeping. It strongly advocates the animal as a profitable investment for agriculturists on small holdings, and suggests as an alternative for an ancient political motto "Three acres and goats," on the ground that the capital locked up in each of these animals is less than is required for the possession of the classical cow. That goat's milk is rich in butter-fat is known to most people, and is well supported by various analyses. There is no doubt that goat's milk is notably rich both in proteid and fat, and that many children have thriven on it who have done very poorly on the product of the larger animal. Another great point in her favor is that the goat is a much more cleanly animal than the cow, and that there is less chance of her milk being contaminated by manure. The fact that will surprise most readers, however, is the daily yield of a good milch-nanny. Something over a quart a day may be expected from a quite ordinary animal. By careful management a very small flock will give an all-the-year-round supply. Tuberculosis seems to be nearly unknown amongst English-bred

goats, although their sisters of Malta are notoriously associated with the fever which takes its name from that island. The *Lancet* states that it is more concerned with the hygiene than with the economic aspect of goat-keeping, but asserts that a good case is made out for the financial advantage of careful goat farming, even on the smallest scale.

THE TRANSMISSION OF PLAGUE BY FLEAS AND THE MEANS TO ARREST ITS TRANSMISSION.

In the *Journal of the Royal Army Medical Corps* for March, 1908, SOMMERVILLE reports on this topic after reading the able article on plague which appeared in the January number of the above journal, by Lieutenant-Colonel C. Birt. Sommerville states that the argument throughout is excellent, as experiment alone is made the criterion of the truth of each conclusion. One cannot overestimate the importance of the experimental data which prove that the inoculation of the *Bacillus pestis* is not through accidental abrasions or cuts of the skin, nor through the dust and filth of the floors of plague-houses, nor through the soil, nor by aerial infection, but by the inoculation of the puncture in the skin with dejecta from the flea that produces the puncture.

In view of some work that he has been engaged in at odd moments during the past three years on the destruction of fleas by disinfectants it is of interest to note that *Pulex irritans*, in addition to *P. cheopsis* and *Ceratophyllus fasciatus*, has been shown to carry plague bacilli, and to communicate the disease to animals. Hertzog's observation of *B. pestis* in *Pediculi capitis* is interesting in this connection, as is also Colonel Birt's reference to dry dust as an essential to their destruction. Fumigation is not nearly so successful in that country as the use of liquid disinfectants in destroying the human flea and the rat flea, and he takes it that in these matters the same results must be obtained in India.

The writer then adds a line from his laboratory note-book to Colonel Birt's article

on the prevention of plague, and asserts that Colonel Birt is correct in stating that ordinary germicides, such as 1 in 1000 mercuric chloride, 1 in 100 permanganate of potassium, 1 in 40 formaldehyde, etc., are powerless to destroy fleas; but his statement that "an emulsion of phenyl and petrol in 800 parts of water appears to be the method of most practical worth devised up to the present," may now, the author thinks, be amended for the benefit of those practically engaged in the destruction of fleas in plague districts. The following table expresses the germicidal values in terms of the Rideal-Walker coefficient of three bodies with which the author has worked on fleas:

Cyllin	17.0
Phenyl	2.0
Petrol	1.0

The germicidal values of the following two combinations are:

50-per-cent cyllin.....	} 10.5
50-per-cent petrol.....	
50-per-cent phenyl.....	} 1.5
50-per-cent petrol.....	

It is evident that the combination of cyllin and petrol possessing a coefficient of 10.5 is a reliable germicide for plague bacilli; it is at the same time a reliable pulicide.

THE INTERNAL USE OF THE OIL OF TURPENTINE.

In the *British Medical Journal* of May 23, 1908, EUSTACE SMITH, after deploring the neglect into which this old-fashioned drug has fallen, states that this modern avoidance of a most serviceable drug may be due in some measure to vague apprehensions as to possible irritation of the kidneys by the use of the oil, and perhaps to some natural repugnance to the taste of the remedy. With regard to the latter point, the oil can be given made up into capsules, but if comparatively small doses are required, it acts more efficiently and is fairly well disguised if it be rubbed up with the *mistura amygdalæ* of the British Pharmacopœia, well sweetened, and flavored with oil of cloves. As to irritation of the kidneys, small doses such as 5 or 10 minims have little

tendency to produce this result, and in large aperient doses (2 drachms to $\frac{1}{2}$ ounce and upward) the action of the drug is upon the bowels, and little of the oil gets absorbed into the circulation to pass through the kidneys and give rise to irritation. Either small doses or very large ones, then, may be given without misgiving. It is only the moderate dose of 30 to 60 drops which is to be used with caution, and its effect upon the kidneys heedfully observed.

Any one who wishes to test the value of turpentine as a hemostatic should note its curative influence upon a case of hemorrhagic purpura. For years the author has been in the habit of treating cases of purpura—when the complaint occurs, as it does so often, in well-nourished, full-blooded children—with purgatives, and looks upon oil of turpentine given in conjunction with castor oil as the best form in which the aperient can be administered. Now it is only in large doses that turpentine has any appreciable aperient effect, and therefore to give it value in a case of purpura we must see that enough is taken to produce the result we desire. The writer has found that for a child of five or six years of age a dose of less than 2 drachms of the remedy combined with an equal quantity of castor oil has no aperient action upon the bowels nor any visible influence in checking the effusion of blood. If the dose first given is insufficient, the quantity may be increased without fear of doing harm; and for children of ten or twelve years he has prescribed as much as $\frac{1}{2}$ ounce of each of the two oils, given every morning, or every other morning, not only without any ill consequences but with great benefit to the patient. In one case in his recollection there was some hemorrhage from the kidney, but whether this symptom was to be ascribed to the general hemorrhagic tendency or to the special action of the remedy he is unable to say. He thinks the former; at any rate, it ceased with the other hemorrhages after the turpentine had been discontinued.

Turpentine is not a violent aperient, as any one can judge for himself if he will make trial of it in a suitable case. After

using it for many years the author confidently asserts that, given as an aperient in the manner recommended, the drug is as harmless as colocynth and far less drastic in its action. The best time for its administration is an hour after food, and the patient should be enjoined to remain quiet for another half-hour after the dose has been taken.

The author again insists upon the importance of prescribing the oil in ample purgative measure in a case of purpura if we wish to secure its full action as a hemostatic. He has given small doses of 5 or 10 minims in the same class of cases, and repeated them every four hours or so, but cannot report favorably upon the result, for the hemorrhagic tendency appeared to be in no way lessened by this method of using the remedy. In the larger quantity, however, oil of turpentine given as recommended in conjunction with castor oil may justly be regarded as a specific, for a long experience has proved to him that a dose of 2 to 4 drachms given once in the day, either morning or evening, for a week or so will in the large majority of cases quickly put an end to the disorder. In cases in which it does not succeed—and one meets with these from time to time—he has noticed that the aperient effect of the drug is uncertain and ineffectual. In other words, the dose has been insufficient and should be increased; for it is only in cases such as these, in which the quantity taken has been too small to induce a copious action of the bowels, that the oil is apt to get absorbed into the circulation in sufficient amount to irritate the kidneys and cause hematuria. But even if this symptom should occur, there is no reason for alarm, for the hemorrhage ceases quickly when the drug is discontinued. The author repeats that this form of treatment is only adapted to the sturdy, well-nourished patients in whom the disease breaks out suddenly upon a state of health. The weakly, wasted infants, who are also apt to suffer from the complaint, require very different medication.

Besides purpura, other forms of hemorrhage may be arrested by the free internal

use of turpentine. In hemophilia a brisk terebinthinate aperient will sometimes bring about a cessation of the bleeding after local styptics have been used in vain. If necessary the dose may be repeated in six or eight hours. Great pallor and apparent weakness in the patient furnish no objection to this method of treatment.

The writer has often noticed, and not without amusement, a look of surprise and almost of alarm when he has recommended the administration of oil of turpentine in aperient dose for a child, as if the suggestion were a novel and daring device of his own invention. But the internal use of turpentine in substantial dose is no new thing. As a remedy for purpura it was first introduced many years ago by Dr. Neligan, who gave 2 fluidrachms night and morning to a child five years of age. Sir Thomas Watson recommended its employment in chorea. As an anthelmintic its value has long been established; and in cases of tapeworm Dr. Mason Good used to advise one ounce to be given in a single dose to a child of ten. Many of the old writers extol the virtues of large doses of the remedy in various forms of illness. Dr. Graves recommends it in doses of 6 drachms every six hours in cases of continued fever, and also in "considerable doses" for the nervous headaches of hysterical girls. Other authorities advocate its use, always in large doses, in puerperal fever (Brennan, Copland, etc.), epilepsy (Cheyne), flatulent colic and ileus (Copland), and in bronchitis associated with emphysema (Corrigan, Waters). The above authorities give no hint that early life is any bar to the use of the remedy; indeed, in some cases they definitely recommend its employment for children of tender years.

Local bleedings, such as hemoptysis and the melena of typhoid fever, may be judiciously treated by the same remedy, but in smaller doses. The author has seen arrest of the hemorrhage to occur in both of these complaints under the use of the drug in doses of 10 or 15 minims three times a day; but its effect when thus administered is much more uncertain than in the case of the aperient doses recommended for purpura.

In addition to hemorrhages, other complaints are found to be benefited by turpentine in more moderate but still substantial dose. For iritis, in the adult patient, both the syphilitic and rheumatic forms, oil of turpentine in drachm doses, given three times a day, was at one time a remedy held in high esteem. It was introduced as such by Carmichael in the year 1829, and recommended especially for cases in which mercury was confirmed by Arnott and others; and the author has been told by Dr. Dawson Williams that he has himself seen the oil used in this manner by the late Mr. Wharton Jones with conspicuous success. Copland and Hockin found it useful in cases of amaurosis; and night-blindness has also been cured by this means. The oil should be given in the dose and with the frequency recommended above. If strangury be produced the use of the drug must be suspended, and the patient be made to drink freely of linseed tea, as originally advised by Mr. Carmichael.

One of the most valuable uses of turpentine is its internal administration in small doses as an antiseptic and sedative in cases of flatulent colic and unhealthy states of the intestinal mucous membrane. In the abdominal cramps to which some children are subject, 3 or 4 minims of the rectified oil of turpentine, with or without double the quantity of castor oil, may be given three times a day rubbed up with a spoonful of *mistura amygdalæ*. If the attacks are severe, a small quantity of codeine may be added. In cases of tuberculous peritonitis the author has found great benefit from this combination. Thus, for a child of seven or eight years, we may order 4 minims of oil of turpentine and 20 of the spirit of nitrous ether, with $\frac{1}{8}$ grain of codeine, to be made into an emulsion with the almond mixture and taken three times a day. The addition of some extract of licorice still further disguises the strong taste of the turpentine. If there be much tympanites the external application of turpentine on hot flannel may be used in addition. Codeine is a better sedative than morphine or chlorodyne in cases of abdominal discomfort, on

account of its small tendency to constipate the bowels.

Young children who are brought up by hand, and sometimes even breast-fed infants, are apt to suffer from an aggravated form of flatulence and colic which may even give rise to convulsions. Such cases are often greatly relieved by turpentine in minute dose given with a few drops of castor oil. The remedy acts upon the kidneys, and sometimes also upon the bowels as well. For an eight months child we may order 1 minim of the rectified oil to be rubbed up with 3 minims of castor oil and 2 grains of gum tragacanth. This must be made up to a teaspoonful with water. For such young patients it may be successfully disguised by adding to each ounce 1 drachm of the liquid extract of licorice, 5 drops of the oil of cloves, and 20 drops of spirits of chloroform. It should be given every four hours, and will do much to prevent the distressing accumulation of wind. If the paroxysms of colic are severe, 1-30 grain of codeine may be added to each dose of the mixture.

In cases of hiccough 10 drops or so of turpentine given with 30 drops of spirits of nitrous ether in an aromatic water has a striking effect in putting a stop to a symptom which in a weakly patient is apt to be not only intractable but harassing and even dangerous. The author states, however, that of all remedies for obstinate hiccough, there is none to be compared for a moment in rapid and successful action with an aperient dose of the old-fashioned rhubarb and magnesia. Some years ago he saw in consultation an elderly gentleman who was suffering from kidney disease and dropsy, with much digestive disturbance. For a whole week previous to his visit the patient had been worried by a persistent hiccough, both night and day, which took him every few minutes, and so completely prevented any refreshing sleep that his weakness had begun to be alarming. He had been treated for this symptom with a variety of sedative and antispasmodic remedies old and new, but the attacks had resisted every effort to suppress them. Finding the tongue excessively foul and the stomach considerably dilated, the author advised a good aperient

dose of rhubarb and heavy carbonate of magnesia, made up into a draught with tincture of cardamom, spirits of chloroform, and peppermint water, to be given without loss of time. This was done, and the writer heard later that the hiccough had ceased immediately after the draught had been taken, and that the patient had eventually made a good recovery; in fact, he lived for some years afterward. The author has used the same treatment in many cases of a similar kind for patients of all ages and cannot remember a single instance in which it has failed to relieve.

The action of turpentine upon the mucous membranes is utilized in the treatment of hepatic concretions. A dose of 10 or 15 drops given two or three times a day after food he has found not only to relieve the catarrh of the bile ducts, but also to have a solvent action upon the gall-stones—if, the writer states, he is correct in drawing that conclusion from the long period of relief which he has known to follow a course of the remedy. Again, in pyelitis arising from the irritation of retained gravel in the pelvis of the kidney, turpentine given in the same dose is very useful in checking the inflammation, although it has no solvent action upon the concretions. In these doses it is most conveniently prescribed in capsule.

THE BLOOD-PRESSURE IN ECLAMPSIA AS AN INDICATION FOR TREATMENT.

In the *University of Pennsylvania Medical Bulletin* for May, 1908, DAVIS draws the following conclusions:

In all cases of eclampsia there is a marked elevation of blood-pressure.

Under treatment where a fall in blood-pressure is noted there is also seen a fall in the amount of albumin.

The most efficient agencies for reducing blood-pressure have been found to be vapor baths, puncture of the membranes, nitroglycerin, and venesection.

The most successful factors in the treatment of eclampsia have been found to be remedies which lower blood-pressure and agencies which eliminate toxins.

THE ABSORPTION OF OINTMENTS.

SUTTON writes on this subject in the *British Medical Journal*, May 27, 1908. He believes that in the selection of a topical application for use in cutaneous disorders the most important factors to be considered are those of protection and penetration. It is not a hard matter to find an agent which fulfils the first requirement, but the last is a much more difficult proposition.

Until within the last few years, experiments made with the view of testing the rapidity with which substances were absorbed by the skin were confined for the most part to repeated quantitative examinations of the various excretions, especially the urine, immediately following the application of the medicament under trial. Aubert incorporated atropine in various ointments, and, after rubbing them on the surface of the skin, had his patients exercise. The perspiration from other parts of the body was then collected and examined. Another method consisted of the microscopic inspection, after sectioning, of skin which had been treated with mercurial salves for varying periods prior to excision. The minute globules of metal served as penetration indicators. Some time ago, while visiting Dr. P. G. Unna's laboratory in Hamburg, the writer undertook, at his suggestion, a series of experiments along this line, guinea-pigs and white rabbits being used as subjects for the tests.

In order to get more direct results, various tissue stains, in the form of aniline dyes, were employed. These were thoroughly mixed with divers vehicles and applied to the bare skin, the hair having been carefully clipped off. In some instances friction was used, in others the fluid or ointment was simply painted or smeared on. After the lapse of a certain period, varying from fifteen minutes to several hours, the patch was excised under anesthesia.

The pieces of tissue were at once blocked, frozen, and cut, the sectioning being done in a direction parallel with the hair shafts and from below upward, in order to prevent the stain from being carried further into the tissues by the microtome blade. For the

same reason the knife was cleansed with ether after each stroke. The sections were immediately placed in a filtered mixture of honey (10.9), glycerin (20.0), and water (70.0), later being mounted and examined in the same media. The use of vaselined rings on the slides prevented evaporation if the specimens could not be examined at once. Of the great number of different methods tried, the one here given has proved the most satisfactory.

Only a few of the aniline dyes answered the required purpose. For oily and ethereal vehicles the author has found scarlet (*scharlach*) best, and for spirituous ones, fuchsin.

The accompanying table represents the comparative values in penetrative powers of the substances most commonly employed.

Substance.	Stain.	Duration of Application.	Penetration.
Acid. carbolic	Fuchsin	1½ hours	Slight.
Alcohol	"	3 hours	Very slight.
Ol. olivæ	Scarlet	4 hours	{ Considerable. Glands well tinted.
Ol. santali	"	4 hours	Fairly good.
Lanolin	"	5 hours	Slight.
Lanolin 1.0 } Ol. olivæ 1.0 }	"	3¾ hours	{ Good. Glands quite pink.
Ol. lini	"	4 hours	Slight.
Goose grease	"	3 hours	{ Excellent. Gland deeply stained.
Cetaceum	"	4 hours	Very slight.
Lanolin 9.0 } Cedar-wood oil 1.0 }	"	3 hours	Quite good.
Petrolatum	"	4 hours	Very slight.
Petrolatum, with friction }	"	4 hours	Considerable.
Petrolatum 9.0 } Cedar-wood oil 1.0 }	"	3 hours	Fair only.
Adeps	"	3 hours	Excellent.
Adeps benzoïnatus..	"	4 hours	Very good.
Adeps 9.0 } Cedar-wood oil 1.0 }	"	3 hours	{ Excellent. Gland well stained.
Ichthyol	"	4 hours	Fair only.
Ichthyol 2.0 } Ol. olivæ 8.0 }	"	4 hours	{ Good. Glands well tinted.
Suet	"	3¾ hours	Fair.
Ung. aquæ rosæ....	"	5 hours	Fair only.
Ung. aquæ rosæ 9.0 } Cedar-wood oil 1.0 }	"	4 hours	{ Much better than ointment alone.
Ol. terebinthinæ....	"	3 hours	Considerable.

Sutton reaches the following conclusions: Lard, simple or benzoïnated, and pure goose grease are the most quickly absorbed of all

the substances tested. Petrolatum is a poor penetrant unless applied with friction. Lanolin, alone, is absorbed very slowly; mixed with a more fluid material, as olive oil, it readily enters the skin. The addition of a small amount of cedar-wood oil to an ointment considerably increases the rapidity of absorption.

HOW TO TREAT SEASICKNESS.

In the *New York Medical Journal* of May 30, 1908, BACHMANN, of the U. S. Navy, gives the following advice:

A subject of the disease prior to embarking on a voyage should be prepared by dietary regulations and a thorough catharsis two days before. The former means simply a restriction in diet as to quantity, particularly in the reduction of meats and fats, eliminating everything but possibly a small amount of light meat once a day, and the latter is best accomplished by fractional doses of calomel (0.1 grain for ten doses as an average dosage), followed by a Seidlitz powder or magnesium citrate in the morning. Whether the *modus operandi* of the calomel is to increase peristalsis or stimulate the liver, the object—to get rid of as much bile as possible in the intestines—is accomplished.

The day before sailing, small doses of potassium bromide are useful in quieting the vomiting center as well as the sensibility of the semicircular canals and lessening the irritability of the stomach. Ten grains three times a day is sufficient for this purpose.

The treatment on the ship demands two most important conditions—fresh air and the reclining position. Frequently these accomplish a cure without medication or diet. Senseless advice to “fight it off,” not to “give up,” but to spite your stomach and eat in the face of nausea or walk around when the semicircular canals should be at repose, is not only bereft of good reasoning, but positively plagues your patient.

With the beginning of rough weather inject atropine sulphate 0.01 grain, and hyoscine sulphate 0.005 grain, every three hours, until two or three doses produce dryness of

mouth, cessation of nausea, and a desire to sleep.

The patient is placed on deck amidships, where motion is least, in a steamer chair or cot, head on a soft pillow, and well blanketed. The absence of odors, especially of tobacco smoke, is greatly appreciated by your patient. If symptoms of seasickness develop in spite of the treatment, or in late cases, if they do not abate, the writer adds a twenty-grain dose of potassium bromide in fruit juice, and aerated water, and follows it with ten-grain doses every three hours. Women are often benefited by warm applications to the epigastrium and abdomen, and severe cases of retching and vomiting in either sex are improved by this as well as hot applications to the head.

The most delectable nourishments are fruits and fruit juices, light broths, crisp crackers, toast and well-baked zwieback, and later the lighter meats, eggs, egg desserts, etc. Champagne, cracked ice, and aerated waters are the best drinks. The sucking of an orange or lemon is pleasant to some. Personal tastes must be considered.

After the patient has improved do not risk a relapse by letting him be too active. Keep him in the open air, reclining, and further his recovery by giving strychnine, 1/20 grain, three times daily, or five-drop doses of tincture of nux vomica in water every three hours. The natural tendency most people have to become constipated at sea is best corrected by a morning dose of fluid extract of cascara sagrada.

THE TREATMENT OF PRURITUS.

In dealing with the treatment of pruritus KROMAYER (*Deutsche medicinische Wochenschrift*, Jan. 9, 1908) limits himself to those cases in which itching is the most prominent and frequently the first symptom. He does not include itching which follows urticaria, eczema, etc. The etiology of pure pruritus is in many cases obscure. One knows that the primary itching leads to scratching, and this in its turn leads to profound changes, mostly of an eczematous or lichenous nature. Up to the present the

treatment has been absolutely symptomatic. It consisted in relieving the itching by applying tar or its derivatives, or such preparations as menthol, bromocol, etc. The oil of sandalwood, in from 10- to 50-per-cent ointment, acts extremely well. The more the itching can be relieved, the better will be the chance of effecting a complete cure. But in the majority of cases this form of treatment fails.

Kromayer states that in the early stages one finds serous vesicles in the cutis. If one applies 15-per-cent caustic potash solution to a pruriginous skin, when no scratches are present, one will see varying numbers of transparent spots of about the size of a pin's head, looking like sago grains. These spots become raised above the level of the skin when the parts are washed with water. The potash appears to act on these vesicles electively, and destroys them. This he utilized in treatment. One thorough cauterization with potash should destroy all the vesicles completely, without producing too deep cauterization of the normal skin or of the affected area. As soon as the normal epidermis shows a gray transparent discoloration, one must interrupt the cauterization by washing freely with water. This may be at the end of four or five seconds in tender skins, while less sensitive skins stand it for about one minute. It is necessary to judge the time during which the treatment may be applied carefully. The caustic must not be applied to fresh eczematous or inflamed areas, to secreting surfaces, to excoriations or scratched places, or to mucous membranes. It is therefore necessary first to cure all the acute inflammatory or other gross lesions by symptomatic treatment. The treatment is only slightly painful, and this pain soon disappears when the water is applied. In any case the patients prefer the slight pain to the intolerable itching. The author illustrates the treatment by some cases.

Kromayer next describes the effect of Roentgen rays on pruritus. Previous to the formation of the vesicles one can demonstrate other histological changes. Among these are hyperemia, transudation, edema,

proliferation of connective tissue cells, etc. The caustic potash treatment only attacks the vesicles, and does not remove the tendency for their formation. For this reason there is a possibility of recurrence after a successful treatment with caustic. The preliminary changes, however, can be dealt with by Roentgen rays. For curative effect it is necessary to give large doses, although small doses of the rays suffice to remove the itching. In pruritus ani, too, Roentgen rays give excellent results with proper dosage. For this form the potash treatment is excluded. A combined treatment with both methods usually will lead to permanent cures. Kromayer supplements his remarks with some results obtained in this way.—*British Medical Journal*, May 23, 1908.

RADICAL OPERATION FOR DIVERTICULUM OF THE ESOPHAGUS.

GEHLE (*Münchener medicinische Wochenschrift*, Jahrg. liv, No. 51) states that he was able to find reports of only seven cases of radical operation for diverticulum of the esophagus. Of these two died soon after operation. In the remainder there was required for healing from four days to sixteen weeks. The author reports a case. The patient was a man seventy-one years of age, who had suffered from diverticulum of the esophagus for about five years. At the time of the operation the patient was in bad condition, as all food and drink were vomited; he had lost much weight and strength, walking was very difficult, and he could not continue his work. Incision was made at the inner border of the left sternocleidomastoid muscle so as to lay free the esophagus. The diverticulum was found to begin at the cricoid cartilage. The sac was drawn out through the skin wound and a small hole made at its upper part, as much as possible of the mucous membrane of the sac was removed with a sharp curette, and a thin esophageal sound large enough to close the hole in the sac was passed into the stomach. The sac was then twisted on its long axis about 180 degrees and a tobacco-pouch suture of catgut put on to draw the base of the sac close around the

sound. The esophagus around the place where the opening was made for the sound was scarified and stitched with catgut into the skin wound. The skin was closed with silkworm-gut. The second day after the operation the patient was given fluid food. On the sixth day the sound was removed from the wound.

As the food then came out of the wound the patient was fed through a tube for eight days, at the end of which time he could swallow. After five weeks the skin wound was completely healed, and a week later the patient was discharged, having gained 31 pounds in weight. At the time of report the patient was a sound, strong man, able to do his work, and eat and drink in a normal manner.

TREATMENT OF INOPERABLE CARCINOMA OF THE UTERUS WITH ACETONE.

GELLHORN (*Münchener medicinische Wochenschrift*, Jahrg. liv, No. 51) states that after experimenting for a year and a half he has found in acetone a substance which meets the demand for something to control the discharge, the odor, and the hemorrhage in inoperable carcinoma of the uterus. The fact that acetone quickly hardens tissues for microscopic sections led the author to use it in cases of carcinoma of the uterus. The technique is as follows: In the first place the ulcerated surface is thoroughly curetted. The resulting wound cavity is then carefully dried, and one to two tablespoonfuls of pure acetone is poured into the wound through a cylindrical speculum, with the pelvis elevated and kept in this position for fifteen to thirty minutes. Then a narrow strip of gauze is packed into the wound cavity. The patient is then put into the horizontal position, the speculum withdrawn, the lower part of the vagina and the vulva washed out with sterile water and dried. In twenty-four hours the gauze is drawn out, and in two or three days the patient leaves her bed. In five days another treatment is carried out. The pelvis is raised, a cylindrical speculum put in and

filled with acetone, and the patient kept in position for half an hour.

The treatment is painless, hence anesthesia is unnecessary, but the vulva and perineum must be protected from the fluid. At the beginning this treatment is repeated three times a week. Gradually the interval between treatments can be lengthened according to the results. If the patient agrees to it, the curettement may be repeated every one or two months. On this point it has been observed that the subsequent curettements are much less bloody and only a small amount of necrotic tissue comes away; they can often be carried out without an anesthetic. After a few days a diminution of the bad odor is clearly distinguishable; the discharge gradually and completely disappears, and at the same time the fetor. Hemorrhage becomes less or entirely disappears. After two or three weeks the crater almost without exception becomes smaller and its walls become smooth and firm. On account of the absence of bleeding and discharge the general condition of the patient becomes visibly improved.

One apparent cure of a well-marked case of cervical cancer is reported in detail. About a dozen cases have been treated in this way, but with the exception noted there was no permanent improvement, although the lives of the patients were prolonged.

TRAUMATIC ARTERIOVENOUS ANEURISM OF THE CEREBRAL PORTION OF THE CAROTID ARTERY WITH PULSATING EXOPHTHALMOS.

BECKER (*Archiv für klinische Chirurgie*, Bd. lxxxiv, Hft. 3) states that trauma takes first place in the causation of pulsating exophthalmos. The former opinion that pulsating exophthalmos is usually the result of an aneurism of the ophthalmic artery or a pulsating tumor of the orbit has been abandoned, and its cause has been found to be arteriovenous aneurism due to injury to the internal carotid in nearly every case.

The author has found in the literature 136 cases of pulsating exophthalmos due to

trauma; 117 of these were due to falls or blows upon the head, 9 to penetration of some pointed object, 10 to gunshot wounds. Of these, 11 were cured without special treatment; 52 were treated by compression of the carotid was done in 72 cases, of 6 improved, and 31 were not benefited and were later treated by ligation. Ligation of the carotid was done in 72 cases, of which 30 were cured, 23 much improved, 3 were unaffected by the treatment, and in 16 there was recurrence. In 17 cases the exophthalmos was bilateral, but in only one of these cases was it necessary to ligate both carotids. In 10 cases unilateral ligation was sufficient, in 5 digital compression of the artery accomplished the object, and in one case there was spontaneous cure.

The author favors the ligation of the internal carotid rather than the common carotid because he fears that the nourishment of the eye will be too seriously interfered with by the sudden cutting off of the blood supply. In several cases blindness has followed ligation of the common carotid. The author reports the case of a soldier who was injured on May 26, 1906, by the bursting of a gun-barrel, fragments of steel and wood striking him in the face. He was brought to the hospital unconscious. The right eye was so badly injured that it had to be enucleated. The left pupil was dilated and fixed. The next day consciousness returned for a short time, and the patient was then very restless, was violent, groaned, and had a tendency to jump out of bed. The pulse was 76 to 80, and in the evening there was a slight fever. For the first time at the end of a week was an ophthalmoscopic examination possible. There was choked disk and whitish color of the temporal half of the retina. After ten days the left eye was seen to protrude and there was thickening of the lower lid. These phenomena became slowly more marked by the next day, so that the lids could no longer be properly closed. The motion of the eye became more and more limited and finally was entirely arrested. On the eighteenth day after the injury a pulsation of the orbit was observed. The

attempt to perform compression of the carotid miscarried on account of the restlessness and irritability of the patient. After some days it was possible to apply compression for one-fourth of an hour several times a day, and with good results. The pulsation ceased and the exophthalmos was less. However, the condition grew worse in spite of compression and cold applications to the eye, and pulsating exophthalmos became well marked with all its accompanying symptoms.

Three and a half weeks after the injury, when the patient's mind became clearer, he complained of buzzing in the head. The wound had slowly closed, but more or less muco-pus flowed from the nose. The x-ray showed a piece of steel as large as a pea in the center of the right frontal lobe, a second piece 3 centimeters long and nearly 1 centimeter thick in the interior part of the optic thalamus and caudate nucleus. The third splinter of steel was 2 centimeters long and half a centimeter thick; it lay with its long axis anteroposterior somewhat obliquely over the sella turcica, supporting itself anteriorly upon the left anterior clinoid process and posteriorly somewhat laterally and below the posterior clinoid process, hence upon the cavernous sinus and the internal carotid artery in its course through the sinus. After trying compression of the carotid and pressure bandages over the eye for fourteen days without improvement, the internal carotid artery was ligated under chloroform anesthesia. The effect was striking. The orbit sank back, the buzzing in the head disappeared, and except for a temporary acceleration to 120 there was no change in the pulse. The patient showed no other symptoms on account of the ligature either during the narcosis or immediately afterward. On the day after the operation the speech was somewhat slow, and during the next ten days there was marked somnolence. Then the patient gradually became more lively and his consciousness clear. The pupils were somewhat narrow and the vision 4/30. The chemosis diminished a little.

Twelve days after the operation a slight

pulsation could again be felt in the orbit and the protrusion had become somewhat more marked. Within nine weeks recurrence was fully established. The signs and symptoms disappeared on compression of the right carotid. There was no pulse in the left carotid and pressure upon it had no influence upon the eye condition. The question of ligation of the right carotid also then arose, but the fact that the results of such procedure could not be calculated led the author to abstain from it. He then fastened the end of a cardboard tube 10 centimeters long over the eye by means of plaster of Paris. A patch was placed over the closed lids; a hog's bladder was put into the cylinder, and into this 300 grammes of mercury was poured. A small piece of ice was placed over the mercury. The cold and pressure were very grateful to the patient, and he took the treatment well. Besides this pressure, which was kept up daily for one hour at the beginning and later for two hours, the right carotid was compressed against the spine three times every hour. This was kept up for six weeks, then gradually withdrawn, so that at the end of two months of this treatment the patient was in good enough condition to be discharged from the hospital, although some evidence of unsoundness was still present.

Three months later the patient returned, and the following condition was found: The orbit was a little more prominent than normal; the eye showed no signs of irritation and could be well opened and closed. There was some hypermetropia, the optic papilla was somewhat pale, but not atrophic. The veins of the fundus were somewhat distended and tortuous, the arteries were normal, there was no pulsation of the vessels, the media were clear, the pupil above medium size, and the patient could read the newspaper at 20 centimeters with +4 glasses. The lateral motions of the eye were normal, the upward and downward somewhat limited. The general condition was good, and the patient was in a medium condition of nourishment. He was rather easily fatigued and behaved

himself somewhat childishly. Speech was clear and fluent; the intelligence was such as would not have excited suspicion of injury to the brain in one not knowing about it. There was no change of character, or motor or sensory disturbance, no swaying on walking or standing, reflexes normal, and no phenomena such as might occur in injury to the optic thalamus, caudate nucleus, and brain ventricles.

PRIMARY OTOGENOUS THROMBOSIS OF THE JUGULAR BULB.

GROSSMAN (*Archiv für klinische Chirurgie*, Bd. lxxxv, Heft 1) concludes his study of this subject as follows:

Primary thrombosis of the bulb is relatively rare; contact thrombosis is more frequent than that by embolism. Peribulbar abscess is many times the cause and many times the result of bulb-thrombosis: in the thrombosis by contact it is the cause, and in thrombosis by embolism it is the result. The diagnosis of primary thrombosis of the bulb is at best only an uncertain one, and is aided by examination of the sound ear to see if a prominent bulb is present in it as indicated by a dark shadow in the lower posterior quadrant of the drumhead. If this be so, a large shadow of the jugular is normal to the diseased ear. The history of bulb-thrombosis in a parent or brother or sister likewise supports the diagnosis. When there is continued fever in the course of an acute or subacute, seldom in a chronic, purulent otitis media, when there is no meningitis or general disease to account for it, and no extra-sinus abscess or parietal thrombus has been found by laying free the sigmoid fossa, there should be no delay in operating for bulb-thrombosis, because by putting it off pyemia or extension to the sigmoid sinus may occur and the necrotic products break through the sinus wall. In parietal bulb-thrombosis ligation of the jugular should be undertaken early and this followed by opening the sigmoid sinus at its lower knee. The tampon which is necessary for controlling the hemorrhage should be removed as soon as possible and the necrotic products in the bulb removed early.

In this way the danger of thrombosis in the inferior petrosal sinus with consequent fatal thrombosis of the cavernous sinus is lessened. It is best, however, in parietal as well as in complete bulb-thrombosis, to lay open and clear out the bulb itself after ligation of the jugular.

THE ABDOMINAL INCISION.

COLLINS (*Surgery, Gynecology, and Obstetrics*, April, 1908) concludes his article as follows:

Abdominal incisions should be placed so they will pass through both aponeurosis and muscle.

The incision in the aponeurosis, and the split in the muscle, should run in different directions. This can be done in a large majority of abdominal operations.

A longitudinal incision should not be made through the linea alba or the sheaths of the rectus, at a right angle to the combined pull of the three side muscles, when it is possible to avoid it.

For very large tumors, and cases in which the character and location of the pathology is in doubt, the longitudinal incision is probably necessary.

If the longitudinal incision is necessary, the split in the rectus should not be continuous with the aponeurotic incision, but should be placed to one side, and preferably through its inner half, to avoid the intercostal nerves which enter the outer half.

It will take longer time and more experience to demonstrate the correctness of these conclusions.

OPERATION FOR ABSCESS AND GANGRENE OF THE LUNG.

- KÖRTE (*Archiv für klinische Chirurgie*, Band lxxxv, Heft 1) reports 58 cases of lung gangrene and lung abscess and bronchiectasis. There were 37 cases of gangrene and abscess. Of these 28 were operated upon by pneumotomy; 20 were cured and 8 died; one got well spontaneously; in 8 the gangrene was followed by

putrid empyema, and of these one got well and 7 died. Gangrene and abscess were most frequent in the lower lobe and next in the upper lobe; bronchiectasis was mostly distributed throughout the lungs. The author considers gangrene and abscess together because it is difficult to separate them. The difference is only one of grade. Tuberculous cavities should not be operated upon. The sputum should be found negative for tubercle bacilli before operation is undertaken. Acute abscess or gangrene was in the majority of cases solitary. When the cavity was near the surface of the lung it was usually localized by adhesions. In 8 cases there was wide-spread empyema.

Bronchial dilatation due to ulceration was quite different from abscess or gangrene in that there were present numerous cavities separated from one another, the opening of one or more of which was not sufficient to drain away the decomposed secretion. Of such cases 21 were presented: 15 were operated upon by pneumotomy, of which 4 recovered and 11 died; in 2 the operation was not completed—one died and the fate of the other is unknown; 4 resulted in putrid empyema, and all died.

In reference to the indications for operation, in acute cavity formation after pneumonia with purulent expectoration without shreds of tissue healing usually results without operation. Even if shreds are present healing may occur if the process is not putrid. When the expectoration is putrid operation must not be delayed, for the patient is threatened with hemorrhage, spread of the inflammation, empyema, metastasis, and sepsis. In bronchiectasis the indications are not clear, for it is very difficult to tell the extent of the process. If the process is diffuse, operation is of no avail; if it is circumscribed to one lobe, there is some hope, but the prognosis is not nearly so good as in gangrene or abscess; also much more radical operation is needed than in these latter processes, such as wide-spread incision of the various cavities, extensive rib resection, and in many cases splitting or resection of an entire lobe. In the presence of severe hemorrhage it is useful to

operate only where there is present a single large cavity, so that there may be some chance of finding and securing the bleeding vessel.

As to narcosis, most cases were operated upon under the A. C. E. mixture, first having received an injection of morphine or morphine-scopolamine. One case of collapse during operation induced the author to carry out a series of fourteen operations under infiltration anesthesia with beta-eucaine aided by a morphine injection. In seven of these cases supplementary general anesthesia had to be induced. General anesthesia must never be deep, or putrid material may be inspired into the healthy lung. Before the operation is begun the patient should cough up as much secretion as possible. The patient must be put in the position which gives best access to the site of operation, and if possible at the same time gives the best chance for the patient to expectorate the exudate. A free incision is important and is best made in the form of a bow. In operating through the back the angle of the shoulder-blade may need to be resected. Then two or three ribs are resected subperiosteally for a distance of 6 to 8 centimeters. If there is no adhesion between the two layers of the pleura or uncertainty in regard to this condition, the pleura should be stitched to the edge of the wound before it is opened. If the pleura tears loose after stitching, gauze packing must be depended upon to protect the pleural sac from overflow of pus. The soft parts around the wound should be covered with iodoform gauze so that pus may not come into contact with them when the lung is opened.

The most important thing is locating the affected focus. This may be done by palpation or aspiration. If these fail there is no resort but to incise the lung at the most likely place. This is best done with the cautery. Numerous cuts and even a crucial incision may be necessary. The incisions may reach to the depth of 3 centimeters without serious hemorrhage. If this is unsuccessful, some dull-pointed, hollow instrument must be inserted in different

directions. The possibility of a mistake in preoperative diagnosis must be kept in mind. If successful, the pus is evacuated and any accessory cavities opened up. Bleeding from a hidden vessel is very difficult to control and serious in its results. A tube packed around lightly with gauze is inserted into the cavity and the edge of the lung cavity sutured to the edge of the wound in the chest wall. Healing takes place by granulation. If no pus can be found a gauze drain should be carried in and the operation brought to a close. If any pus be present it will be apt to come out through the opening thus made.

After-complications to be experienced are hemorrhage, respiratory difficulties, sometimes very serious, and fistula formation.

In bronchiectatic-cavities operation is useful only when they are confined to one lobe. There are required extensive rib resection and incision of the lung; if healing does not follow, resection of the affected lobe must be done.

SUPPORTS OF THE UTERUS AND ABDOMINAL ORGANS.

BARRETT (*Surgery, Gynecology, and Obstetrics*, April, 1908) concludes his article on this subject as follows:

The abdominal contents in an elastic sac are composed of liquid, gaseous, semiliquid, semisolid, and solid material of variable quantities.

By reason of their being too great for the sac at times, and by reason of muscular action, we have an intra-abdominal pressure which, with equilibrium, would be equal in all directions.

By reason of the constant disturbance of equilibrium, and by reason of the sluggishness of the abdominal contents to respond to fluid pressure, this pressure varies in different localities at a given time.

This pressure varies in different individuals, and in the same individual, from moment to moment, with sudden muscular contractions; from hour to hour, with ingestion of food and water, and with excre-

tions; from day to day, with changes in abdominal contents.

This pressure does not tend to drive organs downward by acting upon their upper surface, but merely finds the places of least resistance in the walls, and endeavors to force contents through these areas.

The abdominal contents all have gravity and are sustained by the walls of the sac, the same as the contents of any other sac, except that each of the viscera is suspended by its ligaments.

Each organ is primarily suspended by its attachments, but by reason of the semi-fluid nature of the contents each organ is partially floated by the others and the weight transmitted partially to the abdominal floor.

Any organ floating in fluid presses downward as much less upon its support as the weight of the fluid displaced by the organ.

The pressure of fluid contents is equal in all directions at a given point, but this pressure is finally transmitted to the walls of the sac perpendicular to its surface, and in proportion to the height of the column above the given surface.

By reason of these principles the abdominal contents do not press the uterus down, when they act in the nature of fluids, but rather they buoy it up.

Intra-abdominal pressure, which is equal in all directions, and fluid pressure, which buoys the uterus up, indirectly cause the prolapse of the uterus by not finding the proper resistance at the pelvic floor.

The pressure of solids is directly downward when in a state of equilibrium, and it is possible to have abdominal contents of a solid nature come down upon the uterus in such a way as to hold it forward when it is anterior to a vertical line, and backward when it is posterior to a vertical line.

The gravity of the body of the uterus itself tends to hold it forward when it is anterior, and backward when it is posterior to a vertical line.

Intra-abdominal pressure does not have the above effect, but tends when excessive, by its action on the pelvic floor, to cause

displacement, whether the uterus is forward or not.

Atmospheric pressure has no more part in the support of abdominal organs than it has in the support of grain in an air-tight sac.

Atmospheric pressure acts merely in an effort to make the sac fit the contour of the abdominal contents, which they by their gravity and resistance of some portion of the sac take.

Atmospheric pressure presses the wall in where the contents are making no pressure, therefore where support is not needed, and never where they are making positive pressure, where support is needed.

In other words, when lax ligaments allow abdominal organs to make undue strain upon the pelvic floor, bulging the lower part of the abdomen, the air would be pressing inward at the epigastrium and diaphragm.

The abdominal organs are not held together surface to surface, so that it is difficult for one to leave another. One moves as easily away from the other, and something else moves in to take its place, as though they were in a sac of mosquito netting.

The uterus is an abdominopelvic organ, and not a part of the pelvic floor. It lies normally above the pelvic floor and not against it, but is attached to it by means of the vagina.

If the vagina is to be considered a ligament, it must be for support of the pelvic floor or to prevent ascent of the uterus.

The uterus may come to lie upon the pelvic floor, but so may the other abdominal organs.

The pelvic floor is, then, only indirectly a support to the uterus, as it is to other abdominal organs.

With a weak pelvic floor we may have hernia of abdominal organs: first the bladder and rectum, then the uterus, and then other organs.

The uterus is primarily supported by its ligaments, but may be partially carried by fluid pressure or may be pushed downward by solid structures.

With a weak pelvic floor the bladder,

rectum, uterus, and ligaments may be called upon to do this work of the pelvic floor, and may succeed for a time, but are apt to rebel sooner or later, and prolapse, especially with excessive intra-abdominal pressure.

The pelvic floor is a very important structure in abdominal support.

Injuries to this structure are often responsible for displacements of the uterus.

When displacements have occurred, however, orthopedic work upon the ligaments is usually as necessary as repair of the pelvic floor for permanent relief; neither alone is sufficient.

The uterine ligaments, being the normal support of the uterus, should receive our attention when surgical work is necessary, rather than the creation of false ligaments.

In increased intra-abdominal pressure, much may be accomplished by remembering that the contents of the abdomen are too great. Diet, exercise, massage, and position will accomplish much.

THE TREATMENT OF RACEMOSE ARTERIAL ANGIOMA.

CLAIRMONT (*Archiv für klinische Chirurgie*, Bd. 85, Heft 2) reports a case of racemose arterial angioma in a man aged forty-three, which was present at birth in the form of a small red spot on the back of the head, and increased in size in proportion to the growth of the body in the early years of life. At nineteen years of age the patient fell, striking the back of his head, with resulting slight hemorrhage, which the patient himself stopped by pressure. Three years later as the result of another fall upon the back of the head, the patient bled so much that he was taken unconscious to the hospital. The ulceration which resulted did not heal for a year. During this time a bandage was worn, and it was noticed that the vessels below the bandage grew larger. There was some noise in the head and humming in the left ear. During the last five years there has been rapid increase in size of the vessels in front of the left ear and over the left side of the head, and during the past three

years also over the right side. The patient thought his occupation of flue-blower to be the cause of this trouble, so gave it up. The tumor was pulsating, and the noise and hammering in the head was like a workshop. He could not sleep and feared hemorrhage in the event of a wound.

Examination showed the back and both sides of the head to be covered with greatly dilated, pulsating vessels. On the vertex was a small scab, the removal of which revealed a shallow ulcer. The temporal artery in front of the left ear was about three fingerbreadths in width and three centimeters high, and extended down below the border of the lower jaw; the right temporal artery was enlarged, but not so much as the left. The frontal artery at the root of the nose was the size of the little finger, and several arteries the size of a lead-pencil were scattered over the forehead. Similar changes obtained in the occipital arteries. The x-ray showed the middle meningeal artery to be dilated and tortuous. The heart showed enlargement to the left and a somewhat muffled first sound. There was mild sclerosis of the peripheral vessels and the blood-pressure was slightly increased.

Operation was done on September 11, 1907, as follows: Without previous ligation of the vessels of supply, the patient in sitting position with morphine-chloroform narcosis, an incision was made through the skin, subcutaneous fascia, and occipitofrontalis aponeurosis across the entire skull from left to right, beginning a fingerbreadth above the external canthus of the left eye, proceeding at first directly upward, then in the form of a bow inward and backward, crossing the middle line at the anterior border of the tumor and ending at the right mastoid process. The incision could be made only step by step, the soft parts being pressed against the bone to control the hemorrhage from the greatly dilated vessels which lay just under the thinned integument. The large vessels, especially the large branch of the right anterior temporal artery, which was as thick as a thumb, were freed and divided between two ligatures.

The scalp was then separated from the skull and turned down over the back of the head. On account of the anastomosis this procedure produced severe hemorrhage. The flap raised was the breadth of three hands and extended to the posterior border of the tumor, the vessels being raised with it. Then the vessels were ligated around the base of the flap and separated from the flap. The bleeding was especially severe from the anastomosis on the left cheek and from the right occipital artery. On account of the condition of the patient, at the end of one and a half hours the operation was discontinued. The skin flap was drawn back into place and covered with sterile gauze and a bandage. On lowering the head and giving an intravenous injection of salt solution the patient quickly recovered. The bandage had to be changed every day on account of the large amount of secretion.

Three days later the operation was finished. The vessels were thrombosed and the edema still further prevented bleeding, so the operation was completed without difficulty, although it was time-consuming. At places where the skin was thin perforations occurred. The skin flap after extirpation of the vessels was much larger than necessary, but the excess was trimmed off and its edge sutured to the skin at the anterior border of the wound. The portion of the flap where the ulceration was placed became necrotic over an area the size of the hand, but this defect was later covered by Thiersch grafts. The exudate found its way out from under the flap through the perforations and through several small incisions that had to be made.

On the ninth day after the operation there was profuse bleeding at the left side of the forehead on removal of a stitch, but it was easily controlled. The portions of the temporal and frontal arteries left behind gradually diminished in size. The patient on discharge from the hospital was entirely free from the subjective symptoms which he previously suffered, and only the vessels in front of the left ear showed with any prominence.

ASCARIDES IN SURGERY.

MIYAKE (*Archiv für klinische Chirurgie*, Band 85, Heft 1) says that although the treatment of roundworms is usually in the domain of internal medicine, once in a while surgical conditions result from their presence. He reports three cases of this kind. An eight-year-old boy, taken with abdominal pain, vomiting, and constipation, was found to be poorly nourished, pulse 96, small and weak, no fever, abdomen greatly distended, peristalsis visible through the belly wall; a portion of intestine in the umbilical region was hard and tender on pressure. At operation about 20 centimeters of the small intestine was found filled with a mass of ascarides which completely obstructed it. The intestinal wall was very thin and transparent. The intestine was incised, eighty-three worms removed, and the wound closed by a double row of sutures. The operation lasted only thirty minutes, and afterward saline infusion and camphor injection were resorted to, but the patient died in collapse thirteen hours after operation.

The second case was that of a young man operated upon under the diagnosis of stone in the common bile-duct, as the symptoms suggested that condition. On operation nothing abnormal was found in the gall-ducts, but a rope-like object was felt in the gall-bladder. The bladder was opened and a roundworm 25 centimeters long was removed. The gall-bladder was closed and complete recovery ensued.

The third case was that of a young man who had two years previously been operated upon by the author for pyloric stenosis due to tuberculous peritonitis. A gastro-entero-anastomosis had been done. A year later he began to suffer from severe pain in the right hypochondrium, with fever and distention. Two months later the swelling broke open and discharged an enormous amount of pus and thirty roundworms, but no fecal matter. Shortly after another swelling appeared near the first one. On incision two roundworms were discharged. Three pus-discharging fistulæ persisted; these were opened and curetted. There

was an adhesion between the intestine and the operation scar, but no opening in it could be found. The peritoneum was free from tuberculosis. Symptoms of peritonitis set in, and after a few days there came out of the depths of the wound a mass of feces and two living roundworms. About four months later the fistula had healed; the patient was free from difficulty and had gained weight. The author believes that the worms had passed through the intestinal wall at the site of a tuberculous ulcer without creating a fecal fistula. He also believes that the stool of tuberculous and typhoid patients should be searched for ova of roundworms, and, if found, the patient should be treated for them, as there is danger that they may induce perforation.

THE DIRECTION OF THE JEJUNUM IN THE OPERATION OF GASTRO-ENTEROSTOMY.

MOYNIHAN (*Annals of Surgery*, vol. xlvii, No. 4) says that there now appears to be a general agreement that the posterior gastroenterostomy is preferable to the anterior chiefly because it allows the opening to be made into the jejunum close to the duodenojejunal flexure, thus avoiding the loop which is the cause of various complications. The author now makes the opening into the stomach as nearly vertical as possible, with an inclination, if there is one, downward and to the right. The results have been excellent, vomiting has been absent, and regurgitation of bile has not occurred in two hundred cases operated upon in this way. In three cases operated upon by a method recently suggested by Mayo and Munro, in which the jejunum was applied with its long axis downward and to the left, there was bilious vomiting, it being severe in one of the cases and the worst seen since the author's early experience. Others have had similar bad results from this operation. At an autopsy on one of the cases in which the attachment was made along Mayo's line a twist was found in the jejunum between the duodenojejunal flexure and the point of anastomosis, thus accounting for the trouble. The attach-

ment of the jejunum at the flexure is made to allow such movement as will prevent kinking when the position of the body is changed. It is not correct to say that the jejunum takes a certain direction from the flexure, because it changes with alteration of the position of the body. It is therefore unlikely that it is essential to make the anastomotic opening in the stomach assume any particular direction, but the essential point is to make the attachment in such a manner that there shall be no twist in the duodenum; also the point selected on the jejunum should be as near the flexure as possible.

CHRONIC DIAPHRAGMATIC HERNIA.

CRANWELL (*Revue de Chirurgie*, Jan. 10, 1908) reports the case of a 24-year-old chauffeur, who as the result of a stab complained of darting pain in the left hypochondrium, in the shoulder and nipple, and at the same side at the base of the thorax; also of a noise like boiling water at the base of his left chest, increased by deep inspiration, which also added to his suffering, sometimes occasioning cough. The patient was directed to breathe forcibly, and immediately experienced a sharp pain in the left breast and the epigastrium. His countenance became convulsed with a sardonic grin, there could be heard at some distance very distinctly a bubbling sound, and the patient experienced a sensation as though something were being dragged from his belly into his chest. A scar 4 centimeters long was noted in the eighth left intercostal space in the left anterior axillary line. The thorax was somewhat enlarged at its base, with diminution of respiratory movements at this point. The heart was pushed to the right, and tympany continuous with that of the belly was noted as high up as the fifth rib, more extensive on deep inspiration. On auscultation intestinal sounds could be heard distinctly. An incision was made over the ninth rib, in the main parallel to its course, the musculocutaneous flap was raised, 12 centimeters of the eighth and ninth ribs were resected, after which the pleura was opened and the

lungs found fixed by loose adhesions, which were readily detached. On pushing the lung up the omentum and the transverse colon were found lying in the chest cavity. The omental adhesions were divided and tied and the colon was reduced. The opening into the diaphragm was large enough to admit the hand. It was completely closed by suture. Convalescence was complete and uneventful.

The great majority of diaphragmatic hernias have no hernial sac, hence may properly be called prolapses (220 out of 248). Congenital hernias exhibit a sac, as do also those passing through the esophageal or parasternal orifices. Diaphragmatic hernia is usually due to direct wound, sometimes to traumatism without wound, the muscle rupturing. In the latter case the associated injuries are usually so severe as to occasion death. The stomach is the organ most frequently herniated, and there follow in order the colon, the small intestine, and omentum. In comparatively small wounds the omentum usually prolapses first and adheres to the diaphragmatic orifice. Once fixed it acts as a guide, penetrating into the pleural cavity; it drags with it the transverse colon, later the stomach and spleen. As the stomach is dragged upward it undergoes torsion, producing more or less obstruction both of the cardiac and pyloric orifices. At times the hernia undergoes its evolution with symptoms so inconspicuous as to excite no attention until the complication of strangulation develops. Usually the symptom experienced immediately after the accident is pain in the epigastrium and the left hypochondrium, showing a tendency to radiation toward the left shoulder, associated shortly with digestive troubles; at times dyspnea and palpitation, with physical signs on examination of the thorax, and when the hernia is large with a marked depression in the epigastric region and enlargement of the left side of the chest. Insufflation of air into the stomach and into the rectum by increasing the thoracic tympany and bringing on dyspnea and palpitation may often prove a valuable diagnostic means.

Radioscopy has often been helpful, but not always so. A displacement of the heart is always suggestive. Vaghinger reports 26 cases of strangulated diaphragmatic hernias treated surgically, with 20 deaths and 6 cures.

As to treatment, operation should be practiced as soon as the diagnosis is made. Cranwell strongly advises the transpleural route, since thus more direct access is afforded and the prolapsed gut and adhesions are more readily and intelligently disposed of.

THE TREATMENT IN COXITIS TUBERCULOSA.

PERRET (*Archiv für klinische Chirurgie*, Bd. 85, Heft 1, 1908) bases his conclusions, which are as follows, upon 65 cases out of 230 treated, whose after-history could be obtained. Tuberculosis of the hip-joint usually has a gradual beginning. Direct and indirect trauma, especially of light grade, is the most frequent cause; infectious diseases and metastasis are seldom the cause. Inherited disposition and complication by infectious diseases render worse the prognosis. The appearance of suppuration, especially of open suppuration, is of unfavorable prognostic import, lengthens the course of the disease, and constitutes the first symptom of a sudden exacerbation of the process or of a recurrence.

There exists, especially in the young, a great tendency to spontaneous cure, nevertheless the frequency of relapses indicates the early adoption of radical treatment. The body possesses a great ability for compensation of function by anomalous position and shortening of the affected extremity.

In young individuals the infection of the articulation arises from a primary focus in the bone, while the process in older persons is of synovial origin, provided there is no old encapsulated focus in the bone which has again been lighted up. Although tuberculous foci in the pelvic bones may extend to the joint, they usually do not; however, primary disease of the head and neck of the femur usually sooner or later extends to the joint. The author has several times had the opportunity to observe that coxitis

of pelvic origin had a much more favorable prognosis than that of femoral origin.

The best functional results were obtained by conservative operative treatment, especially by early arthrotomy combined with sequestrotomy or extirpation of the tuberculous focus. The most unfavorable functional results produced were given by resection of the upper end of the femur as was formerly practiced. Basing his statements upon both earlier and more recent experience, the author is of the opinion that in mild, favorable cases in which the tuberculous focus cannot be located with certainty either by clinical examination or by the *x*-ray, conservative treatment is to be continued until it is found that the disease is not only not cured but has by its further course become demonstrable.

In severe neglected cases with open supuration, and otherwise threatening complications, the joint should be opened for exploration, and if it is found to be so diseased that there is no hope of spontaneous healing, all diseased parts which may not recover their vitality should be removed. The author cherishes the hope that the old method of resection of the head and the upper end of the femur will soon fall into disuse.

TREATMENT OF SWEATING FEET BY FORMOL.

VIELA (*Archives de Médecine et de Pharmacie Militaires*, March, 1908) expresses his confidence, based on a long experience in military life, in the efficacy of formol as a treatment of sweating feet.

Referring to the article of Vaillard, he states that the conclusions were so generally accepted that the treatment has become extremely common in the army.

Viela advises that each year on the approach of warm weather all the soldiers affected with sweating feet shall be subjected to the following treatment: On the first day in the morning, at noon, and in the evening the ordinary commercial solution of formol, one-third strength, is painted over the soles of the feet. On the second day three applications are again made, but

with a solution of half strength. On the third day three more applications are made with a solution of full strength. Thereafter every eight days a solution of full strength is applied. In many subjects cure is maintained by an application repeated not more frequently than once in fifteen or twenty days. When the epidermis is greatly macerated the beginning treatment may be begun with 1:10, 1:20, or even 1:30, according to the degree of sensibility. If the application causes very violent burning, washing with water and a weaker strength of solution are employed. Sweating hands are cured by a similar treatment, which has the effect of slightly blunting tactile sensibility.

TREATMENT OF BREECH PRESENTATIONS.

DE NORMANDIE (*Surgery, Gynecology, and Obstetrics*, April, 1908) concludes an article on this subject as follows:

Breeches in primiparæ are common.

Manual extraction occurs in one-half of all breech deliveries.

Forceps to the after-coming head is at times a life-saving procedure.

Lacerations of the maternal soft parts occasionally are very extensive.

Injuries to the child are much more common than in vertex deliveries.

Sepsis is no more common in breech than in vertex deliveries.

Breech presentations in contracted pelves should have an early Cæsarian section.

The fetal heart in breech presentations should be listened to at short intervals after the rupture of the membranes.

If the cord prolapses, immediate extraction should be done.

A long labor *per se* is not an indication for operative interference.

Early rupture of the membranes, without advance in the labor, is an indication for immediate operative interference.

A long labor where the advance is steady, with the membranes intact until a short time before full dilatation, is not an indication for operative interference. The deaths in such cases are relatively few; but in

marked contrast stand out the cases in which the membranes rupture early or before labor starts.

When a series of 21 cases with the membranes rupturing early in labor give a mortality of 12, then is it time to see wherein lies the error of the management of the cases.

We are advised in the text-books to leave breeches alone until a positive indication arises, and that indication is usually said to be an alteration in the fetal heart. If we wait until this occurs, then we must of necessity operate on a baby with lowered vitality. It is not the manual extraction *per se* that kills, it is the fact that a hard operative delivery is done on an already partially asphyxiated baby. This series of cases has shown this fact clearly to the writer; for in the prolapsed cord cases in which manual extraction was done at once, the results were exceptionally good, while where manual extraction was done late, after the membranes were long ruptured, the results were very bad.

It therefore seems fair from this series of cases to recast the indications for operative interference in breeches and not to wait until there is an alteration in the fetal heart sounds, but to regard a non-advance or very slow advance of the labor a positive indication for delivery.

THE GROIN OPERATION FOR FEMORAL HERNIA.

BARDESCU (*Archiv für klinische Chirurgie*, Bd. 85, Heft 2) says that he has made use of the groin method in operating for femoral hernia since 1896, and that he has gradually come to use it in all kinds of cases and believes it excels all other methods. An incision four inches in length, extending upward and outward from the external inguinal ring, is made parallel with and a fingerbreadth above Poupart's ligament down to the aponeurosis of the external oblique muscle. The lower lip of the wound is pulled down, the hernial sac isolated and followed up as much as possible under Poupart's ligament. It is seldom that the scissors need be used to cut the

cribriform fascia or to separate adhesions. The vessels to the outside of the sac must be well cared for, especially if there are adhesions. Next the aponeurosis of the external oblique is opened with the scissors the whole extent of the inguinal canal. The internal oblique and the transversalis muscle are raised up, the cord isolated and carried toward the midline along with the surrounding connective tissue. The fascia transversalis is next opened. If the deep epigastric artery and vein interfere with making an incision of sufficient length in the transversalis fascia, they are cut between two ligatures. Through the incision thus made the sac is so separated that it can be brought up from under Poupart's ligament. If the hernia is so large that it cannot be brought back through the femoral orifice, the peritoneum must be opened in the groin, the contents of the sac replaced, and then the sac returned. If the sac contains only adherent omentum, this is ligated and cut off with the sac. The omentum is treated in the same way if it is incarcerated. If intestine is present in an incarcerated hernia, the sac is opened in the femoral region and the fluid contents absorbed with compresses. Then the peritoneal cavity is opened in the groin, the prolapsed organ examined, the cause of the incarceration removed, and the intestine replaced. Whenever the omentum is present in the sac or is visible in the wound it is resected. The empty sac is freed as high as possible, ligated with catgut, and cut off. The peritoneum is then closed. With a curved Reverdin needle a catgut thread is carried almost completely around the femoral orifice, bringing the ligament of Cooper into contact with that of Poupart. The closure of the femoral orifice is completed through the groin wound by suturing the ligament of Poupart to that of Cooper. The abdominal incision is then closed after the method of Bassini.

The author has used this method in seven cases of reducible, six cases of irreducible, and ten cases of strangulated femoral hernia. The operation is no more difficult than the femoral method. In none of the

author's cases has there been a recurrence, although several have been kept under observation over eight years and most over five years. No bad results have come from the scar in the groin.

EAR DISEASE IN INFANCY AND CHILDHOOD.

KENEFICK (*American Journal of Obstetrics*, April, 1908) says that it is his practice at the New York Foundling Hospital to adopt the following measures: When the diagnosis of acute otitis is made the drum is not pierced but split posteriorly, and, like any other abscess, is thus made to drain from its lowest point. This is done whether or not spontaneous rupture of the tympanic membrane has occurred, and under frequent and proper irrigations of salt solution, carried out with a hand syringe, healing occurs in most cases in from ten days to two weeks. Of course, the clearing of the nasopharynx, and especially of the Rosenmüller fossæ, should be carried out as soon as the age and strength of the child will allow.

In older children the method is practically the same. If the otitis is a complication of some concomitant disease the routine treatment is to split the tympanic membrane without anesthesia, reserving the pharyngeal operation to be carried out as soon after recovery as possible and under light general anesthesia.

If the otitis occurs in a child running about and otherwise well, and, too far advanced to yield to abortive measures, is going on to apparent spontaneous rupture, this outcome is anticipated by incision of the tympanic membrane and clearing out of the nasopharynx and its fossæ under light general anesthesia. Acute otitis is not a contraindication to the proper removal of adenoids or tonsils.

While the writer is aware that cases in the hands of colleagues go on to all kinds of complications with and without recovery, in spite of the skilful practice of these methods, it has been his good fortune never to have had a case of mastoiditis develop in which he had the opportunity to treat the

case in its incipient stage, and he believes that the practice of these methods at the New York Foundling Hospital is responsible for almost the entire absence of mastoiditis, during the past five years, among the 2500 children usually in its care, and of reducing the number of chronic running ears within its walls to less than twenty-five, according to a late report.

This experience leads him to believe that if these methods were properly carried out in each case of otitis in infancy and childhood there would follow in the great majority of cases complete healing of the drum membrane with eventual restoration of the hearing function, instead of destruction and damage to the membrane, which lays the foundation of future deafness, and that mastoiditis and intracranial involvement in children would be much more rare than under the expectant methods so largely practiced at the present time.

CONSERVATIVE OPERATIONS ON BONE TUMORS, BASED ON THE CLINICAL AND PATHOLOGICAL STUDY OF THEIR RELATIVE DEGREE OF MALIGNANCY.

From a study during many years of patients treated in Dr. Halsted's surgical clinic at the Johns Hopkins Hospital, of those in his own practice, and of others communicated to him by colleagues and collated by him from the literature, BLOODGOOD has found that, with rare exceptions, the cases of bone tumors in which the patients recovered without amputation had a similar pathology, while in those that cannot be thus cured the pathologic anatomy is different. In this latter group, in spite of high amputation, the patients succumb to internal metastases. He reviews the tumors for which the extent of the operation is governed by the local growth, and for which amputation is indicated only when the necessary local resection would leave the limb without function. When amputation is required for a local growth the highest point need not be selected. The first mentioned are the bone cysts, of which there are two varieties: the dentigerous

cysts of the jaw, and the form usually seen in the long pipe bones, rarely in the short and flat bones, and differing from the dentigerous cyst in having no connective tissue capsule. The dentigerous cyst needs only the removal of the membranous lining for its cure; the other form can only be diagnosed by an exploratory incision, but curetting and drainage will accomplish its cure. The adamantine epithelioma cannot be distinguished clinically from the dentigerous cyst when it occurs in the bony cavity of the jaw, nor from epulis when it begins under the alveolar mucosa. At the exploratory incision it can be distinguished from the dentigerous cyst by coarse white granular tissue filling its cavities. The tumor should be completely excised, but one can keep close to it. When it occurs as epulis, local removal with excision of the alveolar border of the jaw only is necessary.

The rare medullary fibroma may be looked on as a solid bone cyst. It is not malignant, and a conservative operation is sufficient. Giant-cell sarcoma usually starts in the medullary cavities of the long bones, though periosteal growths have been recorded. It is the most common form of epulis. Cases have been cured by simple curetting, and when recurrences have followed, they have sometimes been eradicated by a second operation. In over one hundred cases of the pure tumor none has given metastasis. It seems justifiable, therefore, first to try conservative methods with this growth. Surgeons should acquaint themselves with the characteristic appearances if they wish to cure tumors with the least possible mutilation. Pure myxoma is rare; Bloodgood has seen but one case. Its treatment is the same as that of a giant-cell sarcoma. Pure enchondroma is readily recognized; it is benign, and local resection suffices. Bloodgood has been surprised at the good effects of complete removal in myochondrosarcoma; metastasis is rare, but possible. Curetting should never be employed, but local resection is justifiable. It is common in the maxillary antrum. Bloodgood thinks that the name osteosarcoma should be applied only to bone tumor associated with

new bone formation, and this is seen, to any extent, only in periosteal growths, occurring most commonly on the lower jaw. In his experience, none of the cases has given metastasis. Local resection should be the operation. He has observed periosteal fibroma only on the jaw; local excision is sufficient. Exostosis bursata is a benign growth, which may be mistaken for a sarcoma, but exploratory incision reveals its nature. Lipoma springing from the periosteum may cause similar mistakes.

The more malignant sarcomata of bone are fatal in spite of high amputation performed in many cases, even a few weeks after the first symptom. Death is due to metastasis, usually to the lungs. These comprise the various forms of the round and spindle-cell tumor and the angiosarcoma, chiefly the perithelial. The importance of urine examination in bone tumor is insisted on. In the multiple myeloma of bone Bence-Jones bodies are present, and their discovery might in case of merely localized symptoms prevent the diagnosis of a single tumor and cause a needless operation in this hopeless disease. Myeloma in its early stages resembles giant-cell sarcoma or bone cyst. It is important to remember, also, that benign bone cyst itself may be a multiple lesion. The cases thus far recorded have been associated with osteomalacia. Multiple giant-cell tumors have been observed in a case of osteitis deformans by Rehn.—*American Journal of Surgery*, March, 1908.

TOTAL AVULSION OF THE SCALP.

MIYATA (*Archiv für klinische Chirurgie*, Band 85, Heft 4) reports the case of a nineteen-year-old girl whose hair was caught in the wheel of a passing vehicle as she stooped to pick up her comb, which had dropped upon the ground, and the entire scalp thus torn off. She did not become unconscious. A physician who was quickly summoned cleansed the wound and put on a gauze bandage, which was soon wet through with blood. As soon as the author was notified he sent his assistant, who re-

moved the bandage, then put on the scalp, and put another bandage over it to protect it from the cold. On admission to the hospital, which was six miles from the place of injury, the patient was very pale, the pulse small and about 80. The wound surface was covered with blood-clots, measured 20 by 25 centimeters, and extended lower on the left side than on the right. Bleeding from the sutures and the bone canals was still in progress. The bones were not injured, although the periosteum was in large part torn away. The author cleansed the scalp, shaved it, rinsed it in saline solution, and sutured it on. After eight days' trial it was found that this would not succeed, and the scalp was removed, when it was found that granulations had sprung up all over the raw surface. Wet dressings of boric acid solution were tried, as were also dry gauze dressings, but under these the pain was so great that resort was had to a boric acid ointment dressing, with complete relief. Twenty-five days after the injury the general condition was very good and continued so. Six weeks after injury skin-grafting was begun by Krause's method, the skin being obtained from the calf of another person and the patient's own thigh, and continued until the whole skull was covered partly by this method and partly by Thiersch's method. Seven months after injury the whole skull was covered by smooth, moderately stretched scar, part of which was movable and part adherent to the skull.

PLASTIC LINITIS.

JONNESCO and GROSSMAN (*Revue de Chirurgie*, Jan. 10, 1908) report the case of a man forty-two years old, who for three years had suffered from recurring epigastric pains with scapular radiations, following eating, and relieved by vomiting. The patient rapidly emaciated on entering the hospital and exhibited an epigastric tenderness. The esophageal sound encountered resistance 52 centimeters from the dental arch; this was so far down that it was evidently in the stomach itself and suggested a bilocular organ. Efforts at insufflation of the stomach caused in-

tense dyspnea, but no evidence of a distended organ. Laparotomy was performed through an incision along the outer border of the right rectus muscle. The stomach was found only after considerable search, was densely indurated, and was about the size of a loop of small intestine. The wall of the stomach was with considerable difficulty fixed to the parietal wound and was then incised, the bistoury penetrating through fibrous tissue to the depth of 1½ centimeters before reaching the lumen of the organ. The lumen was so small that it would not even admit the little finger. Feeding through this artificial opening was not possible because the pylorus was too greatly contracted to admit the catheter. Therefore a Y-shaped jejunostomy was practiced, the patient being fed through this opening. The patient, however, insisted upon taking food through the mouth. This was followed by a discharge through the gastric fistula which produced intense irritation of the surrounding skin. A third operation was practiced for the purpose of closing this fistula, as the result of which the patient perished. Autopsy showed an absolutely normal peritoneal cavity with a rigid stomach, exhibiting a thickness of from 1 to 2 centimeters. This thickening, beginning abruptly at the cardiac orifice, shaded gradually into the first portion of the duodenum.

The microscope showed all the evidence of a chronic inflammation. The lymphatic glands through which the stomach drained were distinctly enlarged, also presenting the signs of chronic inflammation.

Hanot and Gombault report a case characterized by pronounced cachexia, edema of the legs, and ascites, associated with a chronic supraumbilical peritonitis and an adherent immobile stomach.

Jonnesco and Grossman conclude that the treatment should always be surgical, and if the lesion is limited to the pylorus, pylor-ectomy is indicated. Jejunostomy is indicated when the entire stomach is involved. This should be resected, followed by cardio-jejunostomy or cardioduodenostomy, if possible.

In a case of total linitis complicated by

adhesive peritonitis and ascites, where the stomach is enveloped in extensive adhesions, jejunostomy is the single palliative operation to be considered. Two phases of the affection are recognized: first the gastric, characterized by the symptoms of chronic inflammation of the stomach—i.e., of a gastric pain, vomiting of food and mucus and sometimes blood. The second is peritoneal, characterized by ascites, cachexia, and death in two or three months.

SURGICAL PHASES OF ENTEROPTOSIS.

CLARK (*Surgery, Gynecology, and Obstetrics*, April, 1908) from a review of these affections draws the following conclusions:

No case of enteroptosis should be operated upon until medical and mechanical means have been exhausted without relief.

Cases of ptosis due to a congenital habitus will not be relieved by operation, except in the rarest instances; they should not be considered, therefore, as amenable to surgical treatment.

In order to arrive at an accurate estimate of the degree of ptosis, the x-ray should be employed.

In cases following child-birth, in which the abdominal wall is very lax, thus destroying the equilibrium between the extra- and intra-abdominal force, resection of the relaxed ventral tissue through the method suggested by Webster may give perfect relief, provided the diastasis has not been of such long standing that the abdominal organs are far below their normal levels.

In the latter case, in addition to the Webster operation, it may be necessary to suspend the colon by means of the omentum, thus relieving the stomach of the weight of this organ, and at least temporarily supporting the stomach until there may be a natural shortening of its ligaments.

In a simple gastropptosis without marked participation of the colon, the Beyea operation may be the one of preference.

If the cardiac end of the stomach has been greatly dilated, forming a kink at the pylorus and a decided notch in the lesser curvature, a no-loop gastroenterostomy may

be necessary, with closure of the pylorus. (This is merely a suggestion, for the writer has had experience in only one case with this operation.)

In exaggerated cases of ptosis of the transverse colon, in which a pendulous loop is formed which produces stasis of the fecal current, as well as tending to twist upon itself, with symptoms of partial obstruction, nothing less than excision of the redundant loop with end-to-end anastomosis will cure the case.

In cases of redundant sigmoid, with more or less constant pain in the left side, associated with obstinate constipation, a suspension of the sigmoid so as to pull it up out of this bad position in the pelvis may give entire relief. On account of the constant mobility of the sigmoid a recurrence may be noted.

In exaggerated cases of redundant sigmoid attended with symptoms of extreme constipation, verging on to obstruction, a resection of the sigmoid may be advisable.

In all cases a carefully fitted abdominal support, or carefully adjusted straight-front corset, should be worn after operation in order to give as much artificial support as possible.

THE TREATMENT OF CRYPTORCHIDISM.

KOPYLOFF (*Archiv für klinische Chirurgie*, Band 85, Heft 4) says that among recruits of the Austrian army cryptorchidism exists in 0.1 per cent. In these cases the testicle is often painful and has a tendency to malignant degeneration, is subject to many mechanical injuries, and is apt to have associated with it various nervous disturbances; the organ often becomes inflamed, strangulated by torsion of the cord, or a hernia slowly develops in conjunction with it.

A review of the literature shows three fixation methods for the testicle after it has been brought into the scrotum. The first is simple fixation to the fundus of the scrotum; the second consists of similar fixation with the formation of a canal for the cord in such a way as to prevent the testicle

from ascending again; the third is fixation of the testicle by means of threads fastened to the thigh or the sole of the foot. All these methods give satisfactory results inasmuch as the symptoms disappear; however, in many cases the testicle does not remain in the fundus of the scrotum, but recedes to the upper part of it.

The author believes that orchidopexy should be performed when cryptorchidism is accompanied by pain, hernia, or hydrocele of the scrotum or cord. When the testicle lies deep in the abdomen, one should be satisfied with suturing it to the inguinal ring. A satisfactory result is obtained by fixation of the testicle, with a suture which may be removed, to the raphe of the scrotum, while the cord is sutured to the inguinal ring and the upper part of the scrotum. Castration should be done only in exceptional cases—that is, if the testicle has undergone malignant degeneration, or cannot be brought down into the scrotum.

THE USE AND ABUSE OF SALT SOLUTION.

BALLOCH (*American Journal of Obstetrics and Diseases of Women and Children*, April, 1908) concludes an article on this subject as follows:

Physiologic salt solution is simply a fluid isotonic with the plasma of the blood.

Its field of therapeutic usefulness is in conditions which cause alterations in the quantity or quality of the plasma.

The quantitative alterations are chiefly those caused by hemorrhage and obstruction of the upper bowel. The qualitative alterations are those caused by the various toxemias.

The exact percentage of salt in the solution is important, and extemporaneous solutions are to be condemned, owing to the danger of hemolysis.

The subcutaneous tissue offers the most generally useful route for the introduction of the fluid. In emergencies the intravenous route may be chosen, while for post-operative use the rectum best answers the purpose.

Its use as an irrigating fluid in abdominal work has no particular effect in preventing adhesions, and it is questionable whether its use to wash away pus, blood, and débris has any advantage over dry sponging.

RUPTURE OF THE UTERUS THROUGH THE CAESARIAN CICATRIX.

BRODHEAD (*American Journal of Obstetrics*, May, 1908) in an article with the above title concludes as follows:

1. Rupture of the uterus through the Cæsarian cicatrix is of rare occurrence.

2. With prompt operative methods the mortality is comparatively low.

3. When pregnancy follows Cæsarian section, the patient may be safely delivered again by section in a large percentage of cases.

4. In repeating a section, labor should be anticipated by a week or ten days.

5. If section is to be repeated and labor sets in prior to the time elected for operation, the Cæsarian should be performed as soon as possible after the onset of labor pains.

6. Sterilization may be done at the time of section, if the patient so desires.

7. Suture of the laceration has proven successful, but in some instances hysterectomy will be the method of choice.

THE OPERATIVE TREATMENT OF EXOPHTHALMIC GOITRE.

KLEMM (*Archiv für klinische Chirurgie*, Band 86, Heft 1) discusses fully the subject of exophthalmic goitre, and reports in detail thirty-two cases. He sums up as follows:

Exophthalmic goitre is essentially a trophic-vasomotor neurosis which is caused by abnormal change in the secretion of the thyroid gland. The most important symptoms are those of disturbed innervation of the vessels. The next most important symptom is trophic in character, and dependent upon the vascular disturbance. Goitre which is due to hyperemia of the gland, or vascular dilatation, must be dis-

tinguished from the exophthalmic form, although the symptoms are often very much alike. The distinguishing signs of exophthalmic goitre are those of disturbed vascular innervation. There are transition forms from the vascular to the exophthalmic form which are of very similar symptomatology, but are nevertheless not clear cases of exophthalmic goitre. The best remedy is operation, because this brings about the quickest, surest, and most lasting cure. The author operates as soon as the diagnosis is established.

THE OPERATIVE TREATMENT OF PERFORATING GASTRIC ULCER.

VON KHAUTZ, JR. (*Archiv für klinische Chirurgie*, Band 85, Heft 3) reports in detail eleven cases of perforation of gastric ulcer, which he has observed in the last four years, all but two of which he has himself operated upon. The history was, as a rule, characteristic of perforating gastric ulcer—sudden, extremely severe pain; vomiting; in most cases preceded by a considerable period of stomach trouble. In three cases in which the history was not characteristic, and the pain was worse in the lower right side of the abdomen, the trouble was at first thought to be appendicitis. Of the 11 cases, 4 were women and 7 men. As to age, 3 patients were under fifty, two of whom died; 3 between fifty and sixty, two of whom died; 4 between sixty and seventy, three of whom died; and one over seventy, who died. Most of them were, on account of age and condition, bad risks for operation. Less than half the patients were operated upon in the first twelve hours, and the remainder in eighteen hours to two days. The cause of death was in five cases diffuse suppurative peritonitis, and in three cases lobar pneumonia.

Of the objective symptoms, the chief weight was attached to the reflex rigidity of the abdomen, and the marked tenderness to pressure, especially in the umbilical region. The general appearance of the patients was that of severe illness; in all except three cases of nephritis the pulse was weak, but in the nephritis cases it was strong, out of

proportion to the severity of the disease. Obliteration of liver dulness occurred in only three cases; the temperature was uniformly 37°, with variation of a tenth of a degree either way.

Operation was always done under general anesthesia, through a median incision, except in cases mistakenly supposed to have an appendiceal origin. In caring for the ulcer, gauze packing was used in one fatal case, as the perforation was in the posterior part of the duodenal end of the stomach, and on account of adhesions could not be found; in three cases, all of which died, the ulcer was excised and the opening closed by pyloroplasty; direct suture was done in six cases, four of which died and two recovered. The high mortality, 73 per cent, was due largely to the fact that the practicing physicians instead of sending the cases at once to the surgeon depended upon morphine, which only masked the symptoms.

KIDNEY TUMORS AND RETROPERITONEAL GROWTHS.

HAGEN-TORN (*Archiv für klinische Chirurgie*, Band 85, Heft 4) contributes an instructive case to this subject.

The patient was a man aged thirty-three, who had had for a year a tumor in the abdomen which more recently caused pain. On examination a tumor was found which filled the left side of the abdomen and reached two inches to the right of the midline, as well as projecting in the loin. It was diagnosed as a tumor of the kidney or suprarenal body. Operation was done through a laparotomy incision. The tumor had pushed the intestines to the right and lay just under the parietal peritoneum; this was cut and the tumor found adherent to the left kidney. The ureter and the vessels were doubly ligatured and cut through, and the left kidney and tumor shelled out and removed. It was then apparent that still another tumor was present which bordered upon the aorta, pancreas, and diaphragm. This was also removed without difficulty. The enormous cavity left by removal of these tumors, whose weight was ten pounds, was dried out with gauze, the peritoneum closed, and

the abdominal wound closed by two layers of stitches. The wound healed by primary intention; in eighteen days the patient got out of bed, and in three weeks was discharged in good health.

On microscopic examination it was seen that the tumor was a lipoma. Small islands of fat tissue were scattered through the kidney itself. The adrenal body was separated from the tumor by the capsule and was pushed up under the diaphragm.

PRESERVATION OF THE OVARIES ENTIRE OR IN PART IN SUPRAVAGINAL OR PANHYSTERECTOMY.

PETERSON (*American Journal of Obstetrics and Diseases of Women and Children*, May, 1908) reaches the following conclusions:

At least 10 per cent of all women regularly menstruating at the time of operation will be free from the troublesome symptoms of the artificial menopause after hysterectomy with removal of the ovaries.

The percentage of women with no symptoms after similar operations will be slightly more than doubled if some ovarian tissue be retained.

The severity of the symptoms of the artificial menopause is much less when the ovaries are retained after hysterectomy.

It is not necessarily true that the younger the woman, the more will she suffer from the symptoms of the menopause after hysterectomy with removal of the ovaries. The greatest percentage of suffering occurs in women operated upon between the ages of forty and forty-four.

Therefore, the rule that ovaries should be removed from patients over forty when hysterectomy is performed should not be followed.

The frequency and severity of the artificial menopause is not influenced in any way by the kind of hysterectomy performed, whether the ovaries be removed or retained.

The severity of the symptoms of the menopause is practically the same after hysterectomies with removal of the ovaries for fibroid disease of the uterus and inflammatory disease of the appendages.

Retention of ovarian tissue after hysterectomy cuts short the period in which patients usually suffer from the symptoms of the artificial menopause.

The greater the amount of ovarian tissue conserved, the more will the symptoms of the artificial menopause be mitigated.

THE DIAGNOSIS AND TREATMENT OF MALIGNANT DISEASE OF THE PROSTATE.

THOMSON WALKER (*Lancet*, April 11, 1908) reports that of 242 consecutive cases of enlargement of the prostate which have passed through his hands the diagnosis of malignant disease was made in 57, and a simple enlargement in the remaining cases. That no possible cavil may exist in regard to the diagnosis, 17 of these cases have been excluded from the list and put into "doubtful cases." The remaining 40 cases afford no opportunity for criticism. In 11 the diagnosis was confirmed by microscopical examination. In the remaining 29 the disease was either so far advanced when the patient first came under observation or the progress of the disease was such that the diagnosis was indisputable. This gives a proportion of 16.5 per cent of malignant growths in the total number of cases of enlarged prostate. Thomson Walker regards difficult micturition as the cardinal symptom of malignant disease, stating that it is the most frequent, the most prominent, and usually the earliest. The pain was less frequently noticed than the difficulty and frequency of micturition. He calls attention to pain not connected with the act of urination, constant, dull, and persistent. In most of the cases hematuria was absent. Emaciation is a late sign, as is intestinal obstruction. Enlargement of lymph glands often appears in the inguinal region, more commonly along the iliac vessels and the aorta. On rectal examination the characteristic features are hardness, irregularity, and fixation. The growth extends upward along the base of the bladder and outward toward the side of the pelvis. It can sometimes be felt encircling the rectum.

As to treatment, this often has to be

merely palliative because of the extent of the growth. Total extirpation of the prostate, prostatic urethra, seminal vesicle, and bladder base is recommended as the operation of choice.

THE TREATMENT OF DISEASE AND DEFORMITY DUE TO SCAR TISSUE.

SNOWMAN (*Lancet*, April 11, 1908) formally advocates fibrolysin, a combination of sodium salicylate with thiosinamine, as a drug possessing great value in occasioning the absorption of scar tissue. The injections are administered deeply into the gluteal muscles, occasioning little or no pain. It is especially commended in the treatment of keloid, Dupuytren's contracture, and indurations and adhesions in general. Successful results have been reported from the use of this drug in both intestinal and gastric adhesions. The author states that the most interesting of the remote applications of the drug is its use in middle-ear disease. At the General Hospital in Vienna the doses are given in the arm of 0.3 cubic centimeter, gradually increasing to the contents of one ampulla—i.e., 2.3 Cc. The treatment usually comprises from 20 to 30 injections spread over a period of about two months. If no benefit is derived from the first eight or ten injections the treatment is abandoned. Their experience seemed to show that patients with pronounced deafness may benefit to the extent of greatly improved hearing for speech and noise, but recovery to the degree of appreciating the ticking of a watch is not to be anticipated.

Tinnitus also was improved. The immediate effect of the drug seems to be the production of a serous congestion and hyperemia. The author states that no more apprehension need be felt by the practitioner who has decided to treat a suitable case than he would feel in the injection of diphtheria antitoxin.

ANGULATION OF THE SIGMOID.

Under this title SPENCE (*New York Medical Journal*, May 2, 1908) records a case in which the sigmoid was bent upon itself at the middle of the loop, and in this

way three abnormal angles were made, from which he concludes that angulation is not confined to either the upper or the lower end of this portion of the gut, and that there seems to be no good reason for creating a new class for angulation between these two points.

This patient, a man thirty years old, suffered for over two years from intermittent pain on the left side in the region of the descending colon. This was attended by constipation, the stools being either scybalous or fluid. The patient lost 20 pounds during the first year, but very little thereafter. An operation had been performed for suspected cancer of the bowel, but nothing was found. The symptoms continuing as before. Incision was made through the scar of the former operation and an angulation of the sigmoid was found, which recurred even after the adhesions were torn loose. Anastomosis was done, connecting the lower limb of the sigmoid to the ileum at a point about 12 inches from the ileocecal junction. The hernia was repaired by imbricating the layers of the abdominal wall. On the eighth and ninth days after operation the patient vomited blood. Four months later the patient completely recovered health and strength.

CHRONIC OBSTRUCTION OF THE DUODENUM AT THE ROOT OF THE MESENTERY.

CODMAN (*Boston Medical and Surgical Journal*, April 16, 1908) begins his paper on this subject with the following contentions:

That in the human being the transverse portion of the duodenum is more or less compressed by the root of the mesentery.

That slight anatomical deviations from the normal or certain pathological conditions may increase this pressure to a varying extent up to the point of complete occlusion of the gut.

That when this pressure reaches a degree great enough to give more resistance to the muscular efforts of the duodenum than the closed pylorus, the condition becomes of pathological significance.

That thus anatomically the duodenal se-

cretions are brought in contact with mucous membranes unfitted physiologically to withstand their corrosive action.

That the obstruction favors stasis in the duodenum and thus bacterial invasion of the tissues.

That if the above propositions can be proved they will materially alter the present conceptions of the etiology and treatment of

a variety of pathological conditions—*e.g.*, hyperchlorhydria, nervous dyspepsia, duodenal and gastric ulcer, pancreatitis, cholelithiasis, persistent vomiting after laparotomy and in pregnancy, and excessive fluid drainage from wounds in the common duct and duodenum.

These he supports by ingenious arguments and some clinical evidence.

REVIEWS.

THE BACTERIOLOGY OF DIPHTHERIA. Including Sections on the History, Epidemiology, and Pathology of the Disease, the Mortality Caused by it, the Toxins and Antitoxins, and the Serum Disease. By L. Loeffler, M.D., LL.D., Arthur Newsholme, M.D., F.R.C.P., F. B. Mallory, M.A., M.D., G. S. Graham-Smith, M.A., M.D., D.P.H., George Dean, M.D., William H. Park, M.D., Charles F. Bolduan, M.D. Edited by G. H. F. Nuttall, M.D., Ph.D., Sc.D., F.R.S., and G. S. Graham-Smith, M.A., M.D. Cambridge: The University Press, 1908.

This treatise of 700 pages covers practically our entire knowledge of diphtheria. Prefatory to the subject proper are biographical notes and photogravures of Bretonneau, Loeffler, Behring, and Roux, the geniuses of two scientific countries, whose contributions have made possible the present volume. The work is divided into six sections and comprises nineteen chapters, by seven authors.

Loeffler contributes the first chapter, reviewing the history of diphtheria from the earliest Egyptian, Syrian, and Palestine periods to the modern antitoxic therapy and prophylaxis. Unlike many German writers, the author is familiar with and uses freely his knowledge of epidemics in other countries. His article abounds in clinical data, and even discusses remedial agents that have been used in the treatment of the disease.

The second article, by Newsholme, deals with the Epidemiology of Diphtheria. This writer is known as one of the ablest medical statisticians, handling figures with an adeptness rare in medical writers. Unfortunately Dr. Newsholme is a partisan of the now

generally discarded view that there is a relation between the occurrence of diphtheria and rainfall, and in the present volume Park and Bolduan—fifteen chapters later in the book—sound a distinctly discordant note.

The third chapter, by Mallory, is largely a restatement of facts embraced in the monograph by Councilman, Mallory, and Pearce, published in 1901. The valued observations of other workers are largely ignored.

Graham-Smith's article on the Diphtheria Bacillus considers not only the biologic characters of the organism, but enters with detail into its differentiation from allied bacteria. He possesses the Englishman's quality of setting forth his own decisive views, and at the same time with fairness and clearness presents dissenting opinions. We are unfamiliar with any other article that approaches this admirable exposition of the subject. The same writer contributes chapters on Experimental and Natural Diphtheria in Animals, Modes of Infection in Man, Bacteriological Diagnosis, Diphtheria-like Diseases, Preventive Measures, Post-scarlatinal Diphtheria, and Diphtheroid Organisms in the Insane. In the last chapter he summarizes the studies of Robertson, McRae and Jeffry, and Bruce on general paralysis, and leaves the final verdict suspended. Section V, by Dean, is devoted to Types of Immunity, the Toxin of the Diphtheria Bacillus, the Formation of Antitoxin in the Body, and the Effects of Antitoxin

on Toxin. The technique of preparation, standardization, and the prevailing views as to the action of antitoxin on toxin, are fully discussed.

The chapter by Park and Bolduan, dealing with the history of the mortality of diphtheria, is of especial interest to clinicians. For persons continuously exposed to diphtheria they recommend immunizing injections repeated every three weeks.

The volume closes with a 65-page bibliography of the subject.

Superficial examination of the volume would lead one to surmise that no adequate consideration had been given to the clinical phenomena of the disease. Careful review, however, discloses constant intercalation of clinical data, and a practical familiarity with the various phases of diphtheria, set forth in many ways as distinctly as in books dealing with the clinical aspects of the subject. We might hold personal views as to the order in which the data are presented, but the articles themselves deserve the highest praise.

W. M. L. C.

MEDICAL GYNECOLOGY. By Samuel Wyllis Bandler, M.D. Illustrated. W. B. Saunders & Company, Philadelphia, 1908. Price \$5.00.

We are glad to be able to announce the appearance of this excellent book, as it will undoubtedly fill an almost vacant place in medical literature and prove useful to general practitioners, who not infrequently are called upon to treat gynecological cases which are not of such a character as to demand one of the major operations of surgery for their relief. The illustrations are excellent and aid the physician materially in performing the various minor operations or procedures which are essential. The various methods of inserting the different specula and pessaries are clearly described, as are the methods of making vaginal and abdominal examinations. There is a brief description of the use of electricity in the treatment of diseases of pelvic organs, and then various remedial measures other than drugs, such as baths, etc., are discussed. The balance of the book is devoted to a consideration of the treatment of amenorrhea, dysmenorrhea, the various forms of uterine

bleeding, leucorrhea, pruritis, sterility, dysuria, gonorrhea, vulvitis, etc., the closing chapters being upon malignant growths, diseases of the Fallopian tubes, extra-uterine pregnancy and diseases of the ovaries. The volume is a first-rate handbook for the general practitioner and should become very popular when it is well known.

THE AIX-LES-BAINS THERMOTREATMENT. By H. Forestier, M.D. P. Blakiston's Sons & Co., Philadelphia, 1908. Price 60 cents.

Dr. Forestier has prepared a little handbook of 65 pages dealing with the medicinal employment of the waters at this celebrated resort in Europe, which has an altitude of about 800 feet above sea level. To those physicians who may be consulted about Aix-les-Bains it will prove interesting reading. It is, however, largely an advertisement of the fact that its author is a practitioner who wishes patients sent to him in order that his particular method may be tried.

THE TREATMENT OF GONORRHEA IN THE MALE. By Charles Leedham-Green, M.B., F.R.C.S. Second Edition. William Wood & Co., New York, 1908.

In regard to the bacteriology and diagnosis of gonorrhea the author very justly rejects various complicated methods of staining and adheres to the alkaline method of staining by methylene blue. He does not mention the chief characteristic changes, rapid absorption of this and similar stains. Therefore quick exposure to a dilute solution is more essentially diagnostic than the method he gives. The discussion of the remedies to be used in the treatment of urethritis is admirable. As to the details of treatment, aside from the administration of the sandalwood preparations and general hygienic preparations universally regarded as advisable, the author begins with injections by means of the piston syringe with one-fourth per cent of protargol solution three times a day, the fluid to be retained in the urethra four minutes, the injections running up to four or five a day, when the fluid is retained for five minutes or longer. If the protargol solutions are not well borne

they must be replaced by sulphate of thallin ($\frac{1}{2}$ to 1 per cent). Usually in the second week, when gonococci are no longer seen in large numbers, the injection fluid is changed to one having more astringent properties. Twice a day permanganate of potash (1 in 10,000) may be used, and in the evening nitrate of silver (1 in 10,000), the strength of these solutions being gradually increased. If the disease still persists at the end of the sixth to eighth week, as evidenced by the presence of mucus and threads in the urine, it should be regarded as having passed into the subacute or chronic stage.

In subacute urethritis silver nitrate is preferred to any other salts, these solutions being injected into the bladder with a very short conical nozzle. In inveterate chronic urethritis the value of dilatation is considered.

This book is surely a safe guide to the general practitioner in the management of an affection which he is always called upon to treat. It fairly voices the beliefs and practices of those most skilled in the management of this disease. It is entirely lacking in that injudicious and unwise enthusiasm for a given form of treatment which has often resulted in complications far more difficult to heal than the original disease.

SUBCUTANEOUS HYDROCARBON PROTHESES. By F. Strange Kolle, M.D. The Grafton Press, New York, 1908.

Under this title, which may not prove immediately illuminating to the medical man too busy all of his days and many of his nights to remember other than short Anglo-Saxon words and the few long terms needful in the practice of his work, Kolle describes the use of oils and paraffines as a means of permanently correcting deficiencies or deformities of the face, neck, and shoulders. The untoward results quoted by Connell, which are twenty-two in number, receive the attention their importance merits.

Kolle notices, among other undesirable sequelæ of the method, a redness of the skin which may develop weeks or months after the injections are made, and quotes the case of a patient operated upon by a colleague to

the effect that two years after the beautifying process "the tip of the nose still appeared like a red cherry with numerous capillaries showing over its area, while the rest of the nose, though much broadened by secondary displacement of the paraffine, was of yellow color." In regard to the diffusion of injection the author quotes another case, also occurring in the practice of a colleague, in which an injection made up of sweet almond, peanut, and olive oil, with two others which have now been forgotten, was forced beneath the skin for the correction of an abnormal deepening of the inner clavicular notch. Five months later a huge abscess formed a sinus which persisted for months, and finally healed leaving an irregular scar. The healing was accompanied and followed by a tumor, which continued to grow until, at the time he reported, one and a half years after injection, it was nearly 5 inches across its horizontal diameter and $3\frac{1}{2}$ inches across the vertical, and closely adherent to the overlying skin, which had undergone a yellow pigmentary change. The proper instruments for the subcutaneous injection of hydrocarbon, the practical technique, and a specific classification for the employment and indication of the method are described with very satisfactory detail.

To those interested in this form of surgery the book will prove entertaining, indeed instructive, reading.

AIDS TO OSTEOLOGY. By Philip Turner, B.Sc., M.B., M.S. (Lond.), F.R.C.S. William Wood & Co., New York, 1908.

This small volume belongs to what is known as the Students' Aid Series, and is further entitled "The Pocket Osteology." These condensed summaries of subjects are not usually regarded with favor by teachers, but that they serve a useful purpose in so far as passing examinations is concerned cannot be doubted. The work follows closely the teaching of the generally accepted text-books upon the subject, and thus it derives its merit from the skill of its compiler in selecting and properly emphasizing the essential points of the subject covered, and in so arranging these that they form a symmetrical whole in small space.

THE STUDENT'S HANDBOOK OF GYNECOLOGY. By George Ernest Herman, M.B. (Lond.), F.R.C.P., F.R.C.S. Illustrated. William Wood & Co., New York, 1908.

This represents practically a condensed edition of Herman's larger and justly popular book; it is designed primarily for students, and is likely to be serviceable to practitioners who see an occasional gynecological case. As is the case in the larger book, after which this small work is

modeled, it is marked by its sound common sense. Part I contains seven short chapters devoted to Neurasthenia, Hysteria, Headache, Pain in the Back, Chronic Abdominal Pain and Method of Investigation. Part II deals with Chronic Pelvic Pain. The subject of uterine displacement is taken up thereafter, together with diseases, and treated in a thoroughly practical and systematic way.

CORRESPONDENCE.

LONDON LETTER.

BY G. F. STILL, M.A., M.D.

Already the summer exodus from London is beginning, and by next week the professional population of Harley Street and its environs will have emigrated in force to Sheffield for the meeting of the British Medical Association, which begins with the presidential address by Mr. Simeon Snell, the well-known ophthalmic surgeon, on July 28. The annual popular lecture in connection with this meeting has now become a regular feature of the year, and one may be sure that it will lose nothing of its effectiveness in the hands of Mr. Edmund Owen, who has chosen as his subject "Dust and Disease." The annual address in medicine is to be delivered by Dr. J. Kingston Fowler, the senior physician to the Middlesex Hospital, and the address in surgery by Mr. Pye-Smith, who is professor of surgery in the University of Sheffield and brother of the distinguished physician of the same name in London.

At the recent meeting of the Council of the Royal College of Surgeons, Mr. Henry Morris was re-elected president, while Sir Watson Cheyne, Bart., and Mr. Pearce Gould were elected vice-presidents. The four vacancies on the Council, which have occasioned much interest during the past few weeks as to the prospects of candidates, were filled by the election of Messrs. Pearce Gould, Arbuthnot Lane, C. B. Lockwood

(all surgeons to hospitals in London), and Mr. W. F. Haslam, of Birmingham.

Changes have occurred recently in the staff of Guy's Hospital, where Mr. Golding-Bird, F.R.C.S., has resigned his appointment of surgeon and been made consulting surgeon—an honor which carries with it a maximum of precedence and a minimum of work, for, as a famous physician of the same hospital remarked when he was elevated to that rank, he supposed he was called "consulting physician" because he was never consulted, on the "*lucus a non lucendo*" principle. The vacancy on the senior active staff thus created has been filled by the appointment of Sir Alfred Tripp, K.C.V.A., as surgeon.

It is rarely that any public body can boast of having a registrar in his 101st year, but the Royal College of Physicians of London is in that position now. Sir Henry Pitman, who is Emeritus Registrar of the College, was born on July 1, 1808, in London, and lives now at the suburb of Enfield. He acted for forty years as Registrar, and since then has been Emeritus Registrar of the College of Physicians; he was also physician to St. George's Hospital. On his 100th birthday he received a telegram of congratulation and good wishes from His Majesty the King, and a deputation from the Royal College of Physicians, headed by Sir Douglas Powell, presented him with a golden flower-bowl; a letter of congratulation was also sent by the Royal College of Surgeons.

The Queen has been showing her interest in medical work on several occasions. Her Majesty was present at a matinee at the Lyceum Theater on behalf of the fund for removing King's College Hospital to South London; with her came the Princess Victoria and the Duchess of Sparta, and many other distinguished ladies, whose presence gave valuable aid to this effort. The walls of the new King's College Hospital are already rising at Camberwell, but there is much need for funds, especially for the building of the medical school, which still awaits some large-minded man of wealth to insure the existence of a medical school on the most advanced scientific lines. It is difficult for the laity to understand that, as Professor Osler pointed out in one of his addresses, such a school is the surest guarantee of the best skill for the patients in the hospital. The Queen, accompanied by the King, opened the new building of the Royal National Pension Fund for Nurses, which has just been erected close to the Thames Embankment, near the site where Samuel Pepys, the famous diarist, lived.

A baby show took place this month in the East End of London, when no fewer than 312 babies were exhibited, including 13 sets of twins and one set of triplets. Amongst the judges were Dr. W. S. A. Griffith, consulting physician to Queen Charlotte's Hospital, and Dr. H. Morley Fletcher, of St. Bartholomew's Hospital. The Princess Louise was present, the Marchioness of Tweeddale, the Bishop of Stepney, and many others who have taken an interest in this attempt to encourage mothers to take pride in caring well for their infants. The Bishop in making a short speech said that he could not claim to have been a fine baby himself; on the contrary, he had been told that the first words which met his ears when he came into this troublesome world were those of an old nurse, who said, "Well, it will be a mercy if the Lord takes him."

The Birthday Honors list included some well-known medical men. Mr. Watson Cheyne received a baronetcy, which was well deserved by one who has done so much good work in surgery. He was Lord Lis-

ter's house surgeon in Edinburgh and at King's College Hospital when Lord (then Sir Joseph) Lister first came to London as surgeon to King's College Hospital. Sir Watson Cheyne's writings on antiseptic surgery and on tubercular diseases of joints and bones are widely known; he is professor of clinical surgery at King's College and senior surgeon to the hospital. The honor conferred upon him by the King was the occasion of a complimentary dinner to him at the Waldorf Hotel, when a large number of his past house surgeons and dressers and former students of King's College Hospital assembled to congratulate him.

Sir Lauder Brunton, who received a knighthood in 1900, has now been made a baronet. He is consulting physician to St. Bartholomew's Hospital, and his writings on therapeutics won him world-wide recognition many years ago. Recently he has taken an active part in many movements for promoting the physical well-being of the nation. Knighthood was conferred upon Colonel David Bruce, the authority on tropical diseases, and upon Dr. R. W. Burnet, who attended the late prime minister in his last illness; also upon Dr. P. R. O'Connell, surgeon to the Mater Infirmorum Hospital in Belfast.

The month has taken away from us some we could ill afford to lose, notably Dr. Henry Ashby, the children's specialist of Manchester, whose genial character made him beloved by all who knew him, and whose works on diseases of children had made his name familiar all over the English-speaking world. He had been failing in health for several months, and passed peacefully away at the age of sixty-two years.

Sir John Banks, who was at one time president of the Royal College of Physicians in Ireland, and was first president of the Royal Academy of Medicine in Ireland, and an honorary physician to the King, has also recently passed away. Another medical man, whose decease deprives a good cause of an excellent worker, was Dr. Ridge, of Enfield, who gave much of his time and energy to the promotion of temperance.

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ORIGINAL COMMUNICATIONS.

CHRONIC RECURRENT SUPPURATIVE OTITIS MEDIA AND ITS RELATION TO MASTOID AND INTRACRANIAL COMPLICATIONS.¹

BY S. MAC CUEN SMITH, M.D., PHILADELPHIA,

Professor of Otology in the Jefferson Medical College of Philadelphia.

Intermittent Otitic Discharge More Dangerous than the Constant Variety.—In considering the subject of chronic recurrent suppurative otitis media, I will endeavor to demonstrate that this particular form of aural disease is relatively productive of more complications, intracranial and otherwise, than the continuous variety. I have been particularly impressed with the importance of this subject from the fact that the belief still persists, both among the profession and the laity, that an aural discharge which is intermittent is of little importance, the assumption being, therefore, that the underlying disease is never dangerous to life. This fact clearly illustrates that the pathology and prognosis of these conditions are not generally understood, notwithstanding the marked progress which otology has made in this direction during the past decade.

Our Duty to the Profession and to the Laity.—For years past many of us have been persistent and untiring in our efforts to impress upon the profession the importance of aural disease, and to indicate the obligation due our patients in the prompt recognition and treatment of the same. Like all weighty medical problems, the evolution has been slow, but we have at least established a fairly good general conception of the acute diseases, their dangerous compli-

cations and oftentimes tragic sequelæ. As the general surgeon has persistently urged, year after year, the necessity of early operative interference in appendicitis, so must we labor to secure a proper realization of the actual dangers of a discharging ear. Furthermore, we must not only recognize this condition, but must properly appreciate its gravity and demand the adoption of prompt and efficient measures for its relief.

This wide-spread indifference to a very grave problem is the natural outcome of continued apathy on the part of the medical profession, and if the Fellows of this society are to conserve her honorable traditions, it becomes the immediate and imperative duty of each and every one of us to spare no effort, however self-sacrificing, to place before the profession some plain facts relative to the ever-present dangers of an otorrhea. We must, therefore, accept the obligations and responsibility created by such circumstances, and resolve to diffuse, in the most effectual manner at our command, such information as will throw proper and responsive light on this subject before the great body of practicing physicians, who will in turn be moved to action and will thereby become the legitimate instructors of their patients, the laity.

Value of Prophylaxis.—In this connection I wish again to take the opportunity of pointing out the great value of prophylaxis as applied to mastoid and intracranial involvement, complicating acute tympanic dis-

¹Read before the American Laryngological, Rhinological and Otological Society, at Pittsburg, Pa., May 29, 1908.

ease. In the primary stage we find a simple hyperemia and swelling of the mucosa, together with some sero-mucous exudate. At this particular period probably four-fifths of all cases will yield promptly if the well-known simple measures for their relief are immediately applied, whereas the vast majority of all serious complications are directly traceable to the unpleasant fact that these primary measures have been partially or wholly neglected.

I am not unmindful of certain cases complicating the exanthemata, influenza, etc., which seem to be virulent and purulent from their very inception, but even in such cases a free incision of the membrana tympani before bulging occurs will usually prevent serious involvement of the accessory cavities and adjacent structures. Such clearly defined facts should, therefore, convince us that a discharging ear, whether of the acute or chronic form, is frequently the result of woful ignorance or indifference, and that the subsequent mastoid and intracranial implications are mainly chargeable to the same cause.

At times we are confronted with the statement that an otorrhea has existed for many years without producing untoward symptoms. So long, therefore, as the patient experiences no actual suffering he is content, often by the advice of his physician, "to let well enough alone." This view-point is quite natural and excusable on the part of the patient, but it does seem inconceivable, in this day of progressive and preventive medicine, that those charged with and professing to conserve the public health should so far forget their obligations or misinterpret their humane duty.

As a body, those practicing the learned profession of medicine are among the most honorable, and certainly the most self-sacrificing, men to be found in any calling; consequently, this lackadaisical attitude toward aural disease that we too often meet with can only be attributed to misconception or misinformation as to the worth and importance of the subject. Such being the case I again wish to proclaim to this society, individually and collectively, the dissemination

of such information or instruction as may be necessary for the betterment of our profession. This, when viewed in the light of civic duty, must be accepted as an imperative obligation due to our fellow men.

Illustrative Cases.—In order to properly illustrate the destruction that frequently accompanies a recurrent suppurative otitis media, I will briefly relate the histories of three typical cases, which I have recently operated upon.

Case 1.—History: T. W. D., male, aged forty-four years. There is some doubt as to whether he suffered from aural disease early in life. During the past three years he has had a recurrent suppurative otitis media of the left ear, the primary cause of which is unknown.

The patient came under my care at the Jefferson Medical College Hospital, April 3, 1908, stating that for the past three or four days he had suffered very severe pain, not only in the ear and over the mastoid process, but also on that entire side of the head, so much so that hypodermic injections of morphine were necessary to relieve his suffering. The history furthermore states that these acute exacerbations occurred about every three or four months. In the interim the ear would be entirely dry and free from pain. Prior to the last attack, however, he was free from all aural symptoms for about eight consecutive months.

The examination showed the external auditory canal to be filled with a copious, brownish-yellow, foul-smelling pus. There was a good-sized carious opening through the posterior wall of the external auditory canal, and communicating with the mastoid antrum, through which pus was escaping. There was much swelling, redness, and tenderness over the mastoid process, extending upward to the superior border of the temporal bone, anteriorly to the outer canthus of the eye, and posteriorly to the occipital protuberance. Pressure on this swelling would force a large quantity of pus through the carious opening already mentioned into the external auditory canal. The posterior half of the membrana tympani was destroyed; the anterior portion, however, re-

mained intact and was quite normal in appearance.

Patient's temperature at this time registered 103° . Operation was advised and refused. The following day he returned, still suffering, the temperature rising to 104° at noon. Operative interference was strongly urged, but again refused. The next day he came again, at noon, his temperature at this time registering 105.2° . He was not able to secure sleep or relief from pain even under the influence of hypodermic medication. He now readily consented to an operation, and was admitted to the hospital for this purpose.

Operation: A free incision through the soft parts evacuated a large quantity of pus. This incision was carried from the tip of the mastoid to about one inch above the superior border of the auricle, and then forward to the outer canthus of the eye for a distance of about two inches. A transverse incision on a level with the mastoid antrum was carried almost to the occipital protuberance. This large field of operation was necessary on account of the extensive osteomyelitis present. In this particular case the extension from the diploe, which is usually first involved in cases of osteomyelitis, was external rather than internal, probably taking the course of least resistance. The entire external plate of bone was very dark, in some spots almost black, with numerous points of hemic ooze. All this area of necrotic bone was removed. There was a large carious opening in the mastoid process a little below the level of the antrum. The remaining part of the process was also discolored and showed many bleeding points. The necrosis was so great that the whole process was removed, including the tip. The sinus, as so frequently occurs in these chronic cases, was situated rather superficially and far forward, so much so that part of the posterior auditory canal acted as the anterior bony wall of the sinus. The necrotic process had exposed the entire sinus, which was bathed in pus, and covered with a thick layer of what seemed to be healthy granulation tissue, with the exception of one part. The granulation tissue was removed

on account of some bleeding, and this bleeding was increased by the removal of this tissue, although no opening in the sinus could be found. The dura was largely exposed, both through the tympanic roof and the antrum. The discoloration of the dura through the antral opening was so marked that it suggested the possibility of some intradural abscess formation. A hypodermic needle was introduced for the purpose of diagnosis, but with negative results.

The septic temperature ranged from below normal to 106° , and continued for some days after the operation. The man at times became quite delirious, and the whole picture resembled one of septic sinus thrombosis. My own conviction, and the judgment of the various consultants, favored the opinion that the man was suffering from a general septicemia; hence no further operative interference was resorted to. The wisdom of this conservative decision was borne out by the fact that after the patient had passed through superficial multiple abscess formations in various parts of his body, he made a complete recovery.

Blood cultures and differential blood counts were made at various stages of this patient's illness. The former demonstrated the presence of the staphylococcus pyogenes albus, and the latter showed, as might be expected, a marked hyperleucocytosis and a decided increase of the polynuclear percentage. This relative ratio between the hyperleucocytosis and the polynuclear percentage continued throughout his illness, clearly demonstrating the value of the blood count in all septic conditions.

Frequent examinations of the eye-ground gave negative results.

One point of interest and importance to which I especially wish to direct your attention is the fact that we can hardly conceive that all the bone destruction shown in this case could have occurred in the three or four days which marked the acute exacerbation of the chronic recurrent suppurative otitis media, and yet the patient and his family claimed that for eight months prior to the date of this acute exacerbation he did not suffer the slightest inconvenience from

his ear and that the same remained entirely dry during that period.

This brings up for consideration the extensive pathologic changes that apparently take place without causing the patient any discomfort. We are frequently surprised at the extensive necrosis met with in operating for the relief of mastoid disease. This remark applies both to the acute and the chronic form of mastoid disease, but of course is much more common in the latter. From this experience, especially during epidemics of influenza, I am convinced that bone destruction does sometimes occur with little or no inconvenience, until a certain point has been reached. In other words, this furnishes us an additional argument in favor of comparatively early operative interference.

The fact that this patient was able to attend the dispensary service on three consecutive days, with a temperature ranging from 103° to 105°, would indicate that he possessed an unusually good constitution, and that he could not have had any serious intracranial involvement.

Case 2.—History: Another case which well illustrates the point under discussion is that of H. D., aged eighteen years, who suffered from a recurrent suppurative otitis media of the right ear from early childhood, the trouble recurring at intervals ever since. At times the discharge would cease for a period of about one year, the membrana tympani completely regenerating in the interval, the pain, however, being much worse during the period of cessation of discharge. Whooping-cough is the only disease from which the patient ever suffered, and this is said not to have had any influence on the aural condition.

An acute exacerbation occurred about two years ago and was very severe, the discharge lasting until he applied for treatment at the Jefferson Medical College Hospital, October 11, 1907. Examination at that time revealed the presence of a slight discharge in the external auditory canal escaping from a small perforation in the anteroposterior part of the membrana tympani, the remainder of the membrane being intact and look-

ing fairly healthy. The Eustachian tube was patulous, an increased amount of secretion being forced through the perforation by the use of Valsalva's method of inflation. Deep pressure over the mastoid process elicited some tenderness. In order to provide for better drainage, the membrana tympani was freely incised and the patient placed on the usual line of treatment.

November 23, 1907, or about five weeks later, the drumhead was found to have entirely regenerated and was quite normal in appearance, the patient, however, complaining of severe pain over the mastoid process and the right side of the head, although with this exception there was not the slightest evidence of the classical symptoms of mastoid disease, as shown either by redness or swelling over the process or by any inflammatory condition of the drumhead. There was, however, some drooping and slight redness of the superior and posterior wall of the external auditory canal.

When the patient first applied for treatment, the mother was advised that an operation would probably be necessary. The condition had now improved to such an extent that we advised deferring operative interference. This did not meet with the approval of either the patient or his mother, the latter stating that the boy had been going through this process practically all his life, and she was convinced that the recurrence of pain on that side of his head would soon be followed by a reappearance of the discharge, and that at such times he usually became quite ill, with high fever, severe headache, nausea, vomiting, and great prostration.

Operation: Heath's operation was performed on December 6, 1907. Here again the mastoid was found to be of the diploic variety, the accompanying osteomyelitis extending back almost to the occipital protuberance. This, of course, offered a ready explanation of the pain on pressure over the mastoid and posterior to the same. As in the former case, extensive necrosis was found, especially over the sinus, exposing the same for almost its entire extent.

The sutures were removed and the dress-

ings changed six days after the operation. The wound was dressed every second day until January 2, 1908, when the patient was allowed to leave the hospital apparently well. On February 15, 1908, or about two months after the operation, the patient returned, the discharge having entirely ceased and the hearing having shown marked improvement. On April 17, or about four months after the operation, the patient again reported for examination. The membrana tympani was now entirely regenerated, and there was a complete cessation of the discharge. The hearing had improved almost to normal, and he was practically free from all discomfort.

The result, in so far as the hearing is concerned, shows the importance of resorting to a Heath or a modified radical operation in all suitable cases.

The destructive nature of a recurrent suppurative otitis media, to which little or no attention is usually paid, is well illustrated by a patient from the Far West on whom I recently operated.

Case 3.—History: Married woman, aged thirty-eight years. Without apparent cause she has had a recurrent suppurative otitis media of the left ear practically all her life. Up to eight years ago the discharge would appear about every two months. At that time, however, it ceased until nine months ago, when the acute exacerbation was ushered in with characteristic headache, nausea, and great lassitude, extending over a period of several days, until the discharge again appeared, which in turn relieved the pain considerably, as so often occurs. The otorrhea, however, had continued during this entire nine months. In June, 1907, she had an acute suppurative otitis media of the right ear, which was the first time this ear had been involved.

The patient consulted me April 7, 1908. She was found to be suffering severely with headache, confined to the left side. There was no swelling over the mastoid process, but she suffered from rather severe pain on gentle pressure over the mastoid, and extending for some distance posteriorly. There was a copious discharge escaping from the external auditory canal, of a brownish-yel-

low character, streaked with blood, and very offensive. The entire membrana tympani in this ear was practically destroyed, as well as the ossicles, which, however, were said to have been removed on a former occasion. The superior and posterior wall of the external auditory canal was very red, extremely sensitive, and drooping. The hearing was practically *nil*.

Operation: In this patient we found the cortex exceedingly hard, it being flint-like in character. The sinus was pushed far forward and exposed by the necrotic involvement. There was some necrosis of the bony roof of the mastoid antrum, which on being removed evacuated considerable pus from an extradural abscess.

The radical operation was performed in this case. The patient made an uninterrupted but rather slow recovery, on account of suffering from an intercurrent attack of purpura hemorrhagica with hemophilia, the bleeding taking place at many points over the entire surface of her body, but more especially in the throat and gums. Although no undue hemorrhage was met with at the time of the operation, there has been a tendency since that time to have some bleeding from the mastoid cavity. On the other hand, up to the present time there has been no recurrence of the purulent secretion. The vertigo from which she suffered prior to the operation has continued at intervals. This may be accounted for by some possible hemorrhagic invasion of the labyrinth.

Exacerbations Caused by Influenza.—Of seventeen mastoid operations performed by me in six consecutive days, during the second week of January, 1908, seven were of the recurrent variety. All showed extensive bone destruction, exposing either the sinus or dura or both. Two led to the evacuation of pus from a temporosphenoidal abscess, through the mastoid antrum route, and one assumed the Bezold variety of mastoid disease. Previous duration of the disease ranged from twenty-seven months to thirty-one years. The acute exacerbations occurred in two cases about every two months, and in the others about every two years or more. Four of the patients had not noticed any

discharge from the ear, nor experienced the slightest discomfort from the same for a period of three years or more. In one patient the ear had not discharged for six years, when a sinus thrombosis developed. In all these patients the acute exacerbations were complications of influenza.

Of about one hundred mastoid operations recently performed, twenty-one were of the recurrent variety. Of this number, eleven showed unexpected necrotic exposure of the sinus or interior of the skull. Two died during the acute exacerbation—one from an old encysted temporosphenoidal abscess, which ruptured as the result of an injury to the head, and the other from an infectious meningitis. In this latter case free pus was found in the cavernous and petrosal sinuses, the lateral sinus being apparently uninvolved. This patient enjoyed good health until his final and fatal attack, his previous exacerbation occurring more than twelve years before. The primary ear disease developed from epidemic measles forty-two years prior to this date.

During an attack of suppurative otitis media, especially when long-continued, the mucosa lining the tympanic cavity and accessory cavities first undergoes an ulcerative process, and this in turn becomes macerated and peels off, leaving a greater or less area of exposed osseous surface. With the protective and nutritive coat removed, the bone becomes an easy prey to the destructive influence of pathogenic microorganisms. Consequently it is hardly to be wondered at that so much necrosis of the bony structure should occur in such a large number of suppurative cases.

The location of the perforation in the membrana tympani would seem to offer some points in the diagnosis of serious intratympanic as well as mastoid caries. Although the rule is not constant, it nevertheless does occur with sufficient frequency to warrant the assumption that perforations situated superiorly and posteriorly in Shrapnell's membrane, and more especially if they exist in connection with drooping of the posterior and superior wall of the external auditory canal, are definite diagnostic indi-

cations of extensive caries of the tympanic cavity as well as of the mastoid process.

During suppuration the mucous membrane of the tympanic cavity shows hypertrophy, with the formation of vegetation or papillary growths, which may be large or small, discrete or confluent, extending along the inner wall of the cavity to the orifice of the Eustachian tube. As suppuration continues the epithelial cells desquamate and form large, whitish-yellow masses, which are composed of inspissated secretion and desquamated epithelium. These may be retained for an indefinite time unless infected by the staphylococcus, when they are converted into a foul-smelling discharge, consisting of bacteria and granular debris. Occasionally they assume a pearly-white appearance and remain in the middle-ear cavity as homogeneous masses or cholesteatomata.

The inward growth of the epidermis of the external meatus toward the tympanic cavity without the formation of cholesteatomata takes place more often than is generally supposed. On the other hand, secondary cholesteatomata are very often caused by the intrusion of the epidermis of the external meatus into the middle ear. They also develop in the middle ear itself, as shown by the presence of non-nucleated squamous cells. These cholesteatomatous masses may attain a considerable size without the least sign of caries or necrosis. On the other hand, it must be remembered that these epithelial accumulations or growths are probably more destructive, both to the soft and osseous structures, and cause more serious mastoid and intracranial complications than any form of infection.

In long-standing cases the horizontal walls of the semicircular canals may become eroded and the internal structures become the seat of inflammatory changes affecting the vestibular and cochlear aqueducts. This in turn may cause a cerebellar abscess, resulting from suppuration within the labyrinth, the pus having followed the auditory nerve and burrowed its way through the internal auditory meatus.

More especially during epidemics of in-

fluenza we meet a large number of serious mastoid cases, the cause of which cannot be definitely explained. In other words, from the patient's history, and in so far as can be seen, the middle ear was not involved. In cases of this kind, the bacteria and their toxins undoubtedly must have reached the mastoid by a hematogenous form of infection.

As is well known, recurrent cases may remain quiescent for some years, when the patient suddenly complains of severe pain in the head and ear of the same side. There is general hebetude, followed by chills, fever, vertigo, and vomiting, symptoms which frequently usher in some intracranial involvement.

In cases of a mild nature, or in which an intracranial complication is neither present nor in the course of development, the intensity of the above symptoms will be more or less modified, as the severity of the attack is governed entirely by the underlying involvement.

Diagnostic Value of Leucocytosis.—In considering the bacterial invasion of the temporal bone and the adjacent structures, we often speak of the presence and value of a leucocytosis. In this connection it is well to remember that a leucocytosis is a perfectly normal condition in the healthy state, and is, in fact, nature's method of providing scavengers for the destruction of the numerous microorganisms that are constantly invading the human economy. This leucocytosis, therefore, must necessarily vary in degree, depending entirely on the quantity and character of the toxins to be destroyed.

In the great majority of cases a normal leucocytosis is quite sufficient to destroy the hostile microbic incursion, but when the pathogenic organisms are numerous and virulent, a battle royal ensues between the leucocytes and the invading microbic army. In order to successfully meet and destroy the enemy, nature greatly increases the normal percentage of leucocytes, in which state the term hyperleucocytosis should be used, the antithesis being hypoleucocytosis or leucopenia, which naturally signifies an entirely different condition. The normal number of leucocytes varies from 6000 to

10,000 to the cubic millimeter. Hyperleucocytosis indicates an increase to 15,000 or more, and hypoleucocytosis or leucopenia is a decrease from the normal amount.

An examination of the blood is often an important link in the chain of symptoms which goes to make up the diagnosis in a septic process, but this examination must consist of the differential leucocyte count as distinguished from merely determining the presence of a hyperleucocytosis on the one hand, or leucopenia on the other.

The condition in sepsis, in the majority of cases, shows a decided increase in the leucocytes, but this is by no means constant, for as great an authority as Grawitz states that "not rarely active inflammatory processes with suppuration may be present without hyperleucocytosis occurring."

Leucocytosis gauges the combative powers an individual possesses and can use against the infection by which he is attacked, but it does not show the strength of that infection. Thus, in trifling infections in which the activity of the leucocytes is insufficient, and also in fatal cases in which the system is overwhelmed by the toxins, hyperleucocytosis does not develop and even leucopenia may be absent. Facts such as these render the occurrence of hyperleucocytosis in sepsis an inconstant phenomenon. An early development and rapid increase in the number of leucocytes is decidedly in favor of septic disease. We have, however, a good index to the severity of the septic process in the relative percentage of polynuclear leucocytes. Normally there is present a variation of from 59 to 68 per cent of these cells, with a mean percentage of 61. Therefore, if a patient presents a blood-picture in which the relative polynuclear percentage is above 80, it indicates absorption of pus from some part of the body. Pus is seldom found with a relative percentage of less than 80 unless the patient is a child, in which case it may be as low as 73. However, pus should be suspected and looked for in all cases in which the polynuclear percentage is above 70.

In addition to the hyperleucocytosis there is at times another element which may be

determined from the examination of the blood, namely, the demonstration of the special microorganism, often in almost pure culture. It is never sufficient to content ourselves with a single culture of the blood, but this should be repeated, and in addition, various culture media should be employed.

The relations of the ear to sepsis are extremely important. Ponfick examined the ears in one hundred children whose ages varied from one month to four years, and who had succumbed to various diseases. The autopsies revealed that 78 times there was bilateral, and 13 times unilateral, otitis media. In only nine cases was the middle ear normal.

From the foregoing it would seem that we have at our command a valuable asset, which, when properly worked out, may throw much invaluable light on certain forms of sepsis. For example, in cases of recurrent suppurative otitis media, during the stage of *apparent* inactivity, or in other words, between the periods that mark the acute exacerbations, it may be possible, by an examination of the blood, to demonstrate that a retrogressive metamorphosis is in actual progress. The value of such findings would at once become apparent if we were enabled thereby to appreciate such conditions, even in the absence of certain localizing symptoms.

A STUDY OF THE ENZYMES OF THE HUMAN PANCREATIC AND INTESTINAL JUICE OBTAINED THROUGH A JEJUNAL FISTULA.

BY JULIUS H. HOELSCHER, M.D.,

Assistant Professor of Clinical Medicine in Rush Medical College, Chicago.

Human gastric juice obtained through a gastric fistula has been frequently studied. However, chances for a direct examination of the contents of the small intestine below the duodenum rarely present themselves. A case in which operative procedure led to the formation of a jejunal fistula which had to be kept open for several weeks furnished occasion to obtain through this fistula the intestinal contents and to study them with reference to the presence of pancreatic and intestinal enzymes, and with reference to the action and absorption of certain medicinal substances.

The case from which the jejunal contents were obtained presented, in brief, the following features:

Patient, female, aged sixteen, had acute intestinal obstruction following appendicitis. When surgical intervention was sought the patient's condition was serious, and the laparotomy revealed surgical phases that made it necessary to open the jejunum and then establish an external drainage. Fully two months had elapsed before the juices were collected in sterilized rubber bags, which were not allowed to remain in contact with the wound beyond ten hours. Upon removal the bag and contents promptly were delivered to the chemist.

During the investigations the patient was on a diet consisting of the usual foods, such as meat, bread, vegetables, fats, eggs, etc.

The contents of the jejunum, as obtained through the fistula, which was situated about 22 inches from the duodenum, were studied particularly as to the presence of enzymes. These enzymes were tested as to their susceptibility toward certain medicinal substances. Afterward the same drugs, namely, salol, aspirin, and sodium salicylate, were given to the patient to see whether their effect in the body would correspond to their effect in the test-tube experiment. Aspirin was given in five-grain doses every three hours for twenty-four hours; salol in three-grain doses every three hours; and sodium salicylate in five-grain doses every three hours. The collection of the intestinal contents was begun three hours after the first dose of the drugs named had been given, and continued for twenty-four hours.

The intestinal contents as obtained through the fistula about ten to twelve times never showed any free HCl; sometimes a small amount of combined HCl could be demonstrated; generally the contents were faintly alkaline to phenolphthalein and decidedly so toward litmus.

Occasionally the contents were of a more

fluid character, particularly once after the administration of calomel; generally, however, they were of the consistency of a moist mash, usually yellowish-green in color and not fetid at all.

Of the mashes obtained through the fistula, watery and glycerin extracts were made. Particularly the glycerin extracts, to which was added a little thymol, were very satisfactory, since the intestinal enzymes kept well in them for days before a gradual weakening became noticeable. The enzymes found in this manner and studied were an amylolytic, a proteolytic ferment, and the fat-splitting ferment lipase. The amylolytic ferment found in the glycerin extracts could not have been the ptyalin found in the saliva of the mouth and mixed in the mastication of the food with the latter, because it was shown in a number of experiments made that this amylolytic ferment was very susceptible to mineral acids, did not act in the presence of them, and was soon destroyed under their influence. It acted well in a neutral or slightly alkaline solution. The ptyalin of the saliva having been subjected to the action of the HCl in the stomach, must have been destroyed before it reached the small intestine. Hence it appears reasonable to conclude that the amylolytic ferment found in the extract from the contents of the small intestine must have been furnished by the pancreas. It was also shown by systematic comparative experiments that the amylolytic ferment present in the contents of the small intestine was very susceptible to the action of salicylic acid and aspirin, but its action was not much hindered even if larger amounts of carbolic acid or salicylate of soda were present.

After the administration of larger medicinal doses of salicylate of sodium, salol, and aspirin, the contents obtained through the fistula were first examined for these substances or for their "Spaltungs products," carbolic acid and salicylic acid. However, not in a single instance did we succeed in showing the presence of them; hence it appears that they must have been absorbed in the stomach or higher up in the duodenum or jejunum above the site of the fistula.

Theoretically we had expected to find after the administration of salol or aspirin a very much weakened amylolytic ferment, but the latter obtained after the administration of the drugs mentioned showed only a slight degree of damage, if any, very probably because the medicines had been absorbed already when the amyllopsin was secreted from the pancreas into the duodenum. Calomel likewise showed no effect upon the ferments, nor subnitrate of bismuth, the only medicines given which could be easily found in the mass obtained through the fistula.

A very interesting result of the study of the amylolytic ferment was the positive proof of the presence of the ferment which changes maltose into glucose, namely, the enzyme known as glucase. It could be shown that part of the sugar formed in the experiments was glucose; this was due to the presence of an active glucase furnished by the succus entericus of the small intestine.

It could be shown by other experiments that the proteolytic ferment present was trypsin and not pepsin; it acted best in an alkaline, poorer in a neutral, and very poor or not at all in an acid solution. Besides, in one experiment the presence of leucin and tyrosin as the end-product of the proteolytic fermentation was shown. This proved beyond doubt that the proteolytic ferment present was trypsin. Only once did we succeed in demonstrating the presence of lipase; but it is a well-known fact that the latter is a very unstable enzyme, easily destroyed and hard to obtain except by direct watery extracts from fresh pancreatic tissue.

Aside from the interesting facts above mentioned the clinician is confronted with the question, Are aspirin and salol decomposed in the small intestine or stomach? Theoretically, they should be decomposed in the small intestine, and it is consistent with this theory to assume that drugs having well-defined chemical composition should modify the enzymes in the small intestine and also respond to tests for the end-products of decomposition. The complete failure to discover the end-products reopens

the question in its entirety, and the experimental researches herein described negative the theory that these drugs are split up in the small intestine. In proof of this assertion note that aspirin when mixed with the intestinal contents as obtained from the jejunum modifies the enzyme activity positively to the extent of completely annihilating amylolytic activity when present in the strength of 1:1000. If aspirin when given per os were always decomposed in the small intestine, it is consistent to expect that the inhibition would also occur under these circumstances. Aspirin in all likelihood is absorbed before it comes in contact with the pancreatic secretions.

According to these experiments salol is also absorbed before contact with the pancreatic juices. Another factor in favor of this view is the not uncommon experience that the salol test sometimes gives normal results in stenosis of the pylorus.

This subject assumes much importance in the minds of clinicians when applied to diabetes and so-called intestinal indigestion. Aspirin has been used extensively in diabetes apparently with effect on the sugar content of the urine. If it were true that this drug is split up in the small intestine and there exerts anti-amylolytic effects, one could understand its effects on the sugar content in the urine. What effect, if any, aspirin has in diabetes is an unsettled question and open to much research.

The use of salol as an intestinal antiseptic is negated for the same reasons that apply to the assimilation of aspirin. Calomel had no effect other than an apparent increase in the fluidity of the intestinal contents, and aside from indicating that its action on the intestine or pancreas begins high up no other conclusions could be arrived at. On one occasion Turck's intestinal pills were given. All were discharged through the fistulous opening unchanged and undissolved.

On account of the great difficulty encountered in carrying out more extensive researches regarding intestinal pills no other experiments were made. Aside from noting that Dr. Maximilian Herzog carried out the chemical analyses, the courtesy of Dr. Carl

Beck made it possible to obtain the material for this work.

The following is a detailed account of the experiments made and their outcome, which led to the conclusions briefly summarized in the above introductory remarks:

May 27, 1907, two samples were received, one in a small rubber bag, consisting of about 15 Cc. of a cloudy, dirty-greenish fluid with small vegetable fragments floating in it. A preliminary test showed this fluid to be alkaline to litmus but acid to phenolphthalein. The fluid was then filtered and the filtrate subjected to various tests, with the following results:

Test for free HCl	negative.
Test for lactic acid	negative.
Test for bile	positive.
Test for starch	negative.
Test for sugar	negative.
Test for peptone	negative.

Ten Cc. of the filtrate was then titrated with N/10 sol. NaHO, with phenolphthalein as an indicator. Ten Cc. of the filtrate required 1.6 N/10 sol. NaHO for saturation until color of indicator turned. Hence the acidity of the 10 Cc. calculated as HCl was equal to 0.584 HCl per 1000 of the filtered juice. The acidity was all due to combined HCl, since the dimethylamidoazobenzol and the alizarin tests were negative.

The mass in the large rubber bag consisted of undigested food, including much well-recognizable corn. Of this mass 30 grammes was taken and rubbed up in a mortar with 100 Cc. of 60-per-cent glycerin (40-per-cent aq. dest.). After thorough mixture with the dilute glycerin the thick, pasty mass was placed on a filter and a piece of thymol was placed in it. A small piece of thymol was also placed in the bottle which was to receive the filtrate. The filtered glycerin extract was removed after twenty-four hours and used for a number of tests (see below).

EXPERIMENTS WITH THE FILTERED FRESH JUICE.

Experiment No. I.

To 10 Cc. of a 4-per-cent starch paste in test-tubes 1 Cc. of the filtered fresh juice was added to each, as follows:

Test-tube No. 1: 10 Cc. starch paste + 1 Cc. juice.

Test-tube No. 2: 10 Cc. starch paste + 3 drops N/10 sol. H_2SO_4 + 1 Cc. juice.

Test-tube No. 3: 10 Cc. starch paste + 3 drops N/10 sol. NaHO + 1 Cc. juice.

The tubes were kept for thirty minutes in the incubator at 38°C ., and then—to interrupt amylolytic fermentation—immersed in boiling water. After cooling the contents of the test-tubes were examined, with the following result:

Test-tube No. 1, contained amyloextrin, erythroextrin, achroöextrin, 163 mgms. sugar.

Test-tube No. 2 contained amyloextrin, erythroextrin, achroöextrin, 43.7 mgms. sugar.

Test-tube No. 3 contained amyloextrin, erythroextrin, achroöextrin, 14.2 mgms. sugar.

The result of this experiment shows that the fresh filtered juice contained a quite active amylolytic ferment. The action of this ferment was greatly inhibited by even a small amount of acid (H_2SO_4), and markedly reduced by a proportionate amount of alkali (NaHO).

Experiment No. II.

To test-tubes containing 10 Cc. of a 4-per-cent paste 1 Cc. of glycerin extract No. 1 was added and varying amounts of acid and alkali, as follows:

Tube No. 11: 10 Cc. 4-per-cent starch paste + 0 Cc. N/10 sol. HCl + 5 Cc. H_2O + 1 Cc. glycerin extract No. 1.

Tube No. 12: 10 Cc. 4-per-cent starch paste + 1 Cc. N/10 sol. HCl + 4 Cc. H_2O + 1 Cc. glycerin extract No. 1.

Tube No. 13: 10 Cc. 4-per-cent starch paste + 2 Cc. N/10 sol. HCl + 3 Cc. H_2O + 1 Cc. glycerin extract No. 1.

Tube No. 14: 10 Cc. 4-per-cent starch paste + 3 Cc. N/10 sol. HCl + 2 Cc. H_2O + 1 Cc. glycerin extract No. 1.

Tube No. 15: 10 Cc. 4-per-cent starch paste + 4 Cc. N/10 sol. HCl + 1 Cc. H_2O + 1 Cc. glycerin extract No. 1.

Tube No. 16: 10 Cc. 4-per-cent starch paste + 5 Cc. N/10 sol. HCl + 0 Cc. H_2O + 1 Cc. glycerin extract No. 1.

Tube No. 17: 10 Cc. 4-per-cent starch paste + 1 Cc. N/10 sol. NaHO + 4 Cc. H_2O + 1 Cc. glycerin extract No. 1.

Tube No. 18: 10 Cc. 4-per-cent starch paste +

2 Cc. N/10 sol. NaHO + 3 Cc. H_2O + 1 Cc. glycerin extract No. 1.

Tube No. 19: 10 Cc. 4-per-cent starch paste + 3 Cc. N/10 sol. NaHO + 2 Cc. H_2O + 1 Cc. glycerin extract No. 1.

Tube No. 20: 10 Cc. 4-per-cent starch paste + 4 Cc. N/10 sol. NaHO + 1 Cc. H_2O + 1 Cc. glycerin extract No. 1.

Tube No. 21: 10 Cc. 4-per-cent starch paste + 5 Cc. N/10 sol. NaHO + 0 Cc. H_2O + 1 Cc. glycerin extract No. 1.

The tubes were kept for one hour in the incubator at 38°C .; then the fermentation was interrupted by immersion in boiling water. Result of experiment:

Tube No. 11: Amyloextrin, erythroextrin, achroöextrin, 264.2 mgms. sugar.

Tube No. 12: Traces of the three dextrans, 0 mgms. sugar.

Tube No. 13: No change.

Tube No. 14: No change.

Tube No. 15: No change.

Tube No. 16: No change.

Tube No. 17: Amyloextrin, erythroextrin, achroöextrin, 25 mgms. sugar.

Tube No. 18: Traces of the three dextrans; trace of sugar.

Tube No. 19: No change.

Tube No. 20: No change.

Tube No. 21: No change.

The result of this experiment shows that the glycerin extract contained an active amylolytic ferment, which showed the well-known susceptibility for mineral acids and a lesser susceptibility for alkali.

The sugar formed in the foregoing experiments had been calculated as maltose. The following experiment was made to determine whether the glycerin extract did not also contain the ferment which changes maltose into dextrose (glucose):

Experiment No. III.

To 200 Cc. of a 4-per-cent starch paste 5 Cc. of glycerin extract No. 1 was added and the flask kept in the incubator at 38°C . After one hour the iodine test showed the presence of the three dextrans, amyloextrin, erythroextrin, achroöextrin. After several hours there was very little amyloextrin present, and much erythro- and

achroödextrin. But even after twenty-four hours the dextrin had not all been changed to achroödextrin, and much erythro- and very little amyloëdextrin was present. Therefore, 10 Cc. of another glycerin extract, to be designated as No. 2, was added.

Finally, after three hours, the contents of the bottle were brought to boiling and filtered. The filtrate by titration with Fehling's solution showed 2.4475 sugar, calculated as maltose.

The filtrate was then evaporated down and acetate of soda and hydrochlorate of phenylhydrazin added to obtain the sugar as an ozazon. However, it did not crystallize out well and the experiment was abandoned, and a new one, with a stronger starch paste, made later.

Experiment No. IV.

About $\frac{1}{2}$ gramme of fresh butter was placed in a test-tube, and to it was added 5 Cc. N/10 sol. NaHO + 5 Cc. H₂O + 4 Cc. of glycerin extract No. 1. The test-tube was then well shaken so that its contents became emulsified. It was then placed in the incubator at 38° C. and kept there for three and a half hours. During that time a faint, though distinct, smell of butyric acid developed. After 3½ hours the contents of the test-tube were washed into a beaker, and they were titrated with N/10 sol. HCl with phenolphthalein as an indicator. This titration showed a loss of 1.5 N/10 sol. NaHO. This, of course, represents the amount neutralized by the fatty acid formed in consequence of fat-splitting by lipase present in the glycerin extract No. 1.

The result of this experiment showed the presence of lipase in the glycerin extract.

Experiment No. V.

The following solutions were prepared to make tests for the presence of the peptic and tryptic enzymes:

Flask No. V "A" contained 10 Cc. fresh egg-albumen, 60 Cc. N/10 sol. NaHO, 45 Cc. H₂O, 5 Cc. glycerin extract No. 1.

Flask No. V "B" contained 10 Cc. fresh egg-albumen, 60 Cc. N/10 sol. HCl, 45 Cc. H₂O, 5 Cc. glycerin extract No. 1.

Both flasks were well shaken, and were then kept in the incubator at 38° for three

hours. In order to bring the fermentation to a stop the contents of the two flasks were then brought to boiling. On boiling the contents of flask "A" remained clear, while in flask "B" several flocculent, coagulated masses showed up. It therefore appeared at once that the proteolytic fermentation had been more advanced in "A" (alkaline) than in "B" (acid).

The contents of flask "A" were then filtered and the filtrate carefully neutralized with dilute H₂SO₄. No alkaline albuminate evidently being present, the neutralized fluid remained clear. Next acetic acid was added to the contents of flask "A" and the thoroughly acidulated fluid was boiled. A moderate amount of coagulable albumens were then precipitated and removed by filtration. The fluid was then treated with an excess of saturated solution of ammonium sulphate, whereupon a moderate amount of albumoses were precipitated and filtered out. The filtrate then gave the peptone reaction. The final filtrate was then evaporated down, and in the thick mass a few leucin and tyrosin crystals were seen. Piria's test for tyrosin gave a very faint reaction only. Evidently the fermentation had not been carried far enough, so that leucin and tyrosin had only been developed in traces. However, the result of the experiment showed the presence of active trypsin in the mass obtained through the fistula.

The result of the examination of the contents of flask "B" showed very little converted hydrolyzed albumen, only a trace of albumoses separating out on saturation with sulphate of ammonia. Test for peptone showed only the faintest possible trace. Hence it appears that while the contents of the small intestine removed contained a good deal of active trypsin, there was hardly any active pepsin recovered in the glycerin extract.

Experiment No. VI.

To determine whether the sugar formed is maltose or glucose:

To about 400 Cc. of a thick starch paste 50 Cc. of glycerin extract No. 2 was added and the solution was made up to 500 Cc. It was then kept in the incubator at 38° C. for twenty-four hours. The contents of the

flask were then boiled to stop the amylolytic fermentation. The filtrate showed the presence of amylo-, erythro-, and achroödextrin and sugar (calculated as maltose) 2.456. The fluid shaken with animal charcoal and filtered again is dextrorotary (calculated as glucose Schmidt Haensch polariscope), 7.25 per cent. This strong dextrorotary power is due to the presence of the dextrorotary dextrans. A number of qualitative tests were then made, and these showed that the sugar present most probably consisted of a mixture of glucose and maltose. The great bulk of the filtrate was then evaporated down to precipitate the sugar as an ozazon after the addition of phenylhydrazin and acetate of soda. The precipitation was several times redissolved and recrystallized. Finally, some of the ozazon crystals were collected on a weighed filter and dried in the drying oven and desiccator until constant in weight. The ozazon so obtained weighed 361 mgms. The nitrogen was then determined by Kjeldahl's method:

Glucosazon: $C_{12}H_{22}N_4O_4$ M.W. 358.

Maltosazon: $C_{24}H_{42}N_4O_{12}$ M.W. 520.

Percentage of N in glucosazon, 15.64.

Percentage of N in maltosazon, 10.77.

Calculated nitrogen in 361 mgms. glucosazon,
56.46 mgms.

Calculated nitrogen in 361 mgms. maltosazon,
38.88 mgms.

Found 46.48 mgms. N by Kjeldahl's method in
the .361 gramme of material.

Hence, it was shown that part of the sugar was glucose; if all had been maltose not more than 38.88 mgms. of N could have been found.

May 31, 1907, 3.00 P.M., received about 75 to 90 Cc. of a mash obtained six hours after the ingestion of meat. Microscopic examination shows numerous crystals of bismuth subnitrate bile-stained; also meat fibers in all stages of digestion, some almost completely dissolved, others with much loss in striation, others with distinct transverse and longitudinal striations; also found vegetable fibers and cells.

Glycerin extract prepared in the usual manner, to be designated as glycerin extract No. 3.

Experiment No. VII.

Tube No. 1: 10 Cc. 4-per-cent starch paste +
11 Cc. 0.1 per cent sol. salicylic acid + 0 Cc.
 H_2O + 1 Cc. glycerin extract No. 2

Tube No. 2: 10 Cc. 4-per-cent starch paste +
10 Cc. 0.1 per cent sol. salicylic acid + 1 Cc.
 H_2O + 1 Cc. glycerin extract No. 2.

Tube No. 3: 10 Cc. 4-per-cent starch paste +
9 Cc. 0.1 per cent sol. salicylic acid + 2 Cc.
 H_2O + 1 Cc. glycerin extract No. 2.

Tube No. 4: 10 Cc. 4-per-cent starch paste +
8 Cc. 0.1 per cent sol. salicylic acid + 3 Cc.
 H_2O + 1 Cc. glycerin extract No. 2.

Tube No. 5: 10 Cc. 4-per-cent starch paste +
7 Cc. 0.1 per cent sol. salicylic acid + 4 Cc.
 H_2O + 1 Cc. glycerin extract No. 2.

Tube No. 6: 10 Cc. 4-per-cent starch paste +
6 Cc. 0.1 per cent sol. salicylic acid + 5 Cc.
 H_2O + 1 Cc. glycerin extract No. 2.

Tube No. 7: 10 Cc. 4-per-cent starch paste +
5 Cc. 0.1 per cent sol. salicylic acid + 6 Cc.
 H_2O + 1 Cc. glycerin extract No. 2.

Tube No. 8: 10 Cc. 4-per-cent starch paste +
4 Cc. 0.1 per cent sol. salicylic acid + 7 Cc.
 H_2O + 1 Cc. glycerin extract No. 2.

Tube No. 9: 10 Cc. 4-per-cent starch paste +
3 Cc. 0.1 per cent sol. salicylic acid + 8 Cc.
 H_2O + 1 Cc. glycerin extract No. 2.

Tube No. 10: 10 Cc. 4-per-cent starch paste +
2 Cc. 0.1 per cent sol. salicylic acid + 9 Cc.
 H_2O + 1 Cc. glycerin extract No. 2.

Tube No. 11: 10 Cc. 4-per-cent starch paste +
1 Cc. 0.1 per cent sol. salicylic acid + 10 Cc.
 H_2O + 1 Cc. glycerin extract No. 2.

Tube No. 12: 10 Cc. 4-per-cent starch paste +
0 Cc. 0.1 per cent sol. salicylic acid + 11 Cc.
 H_2O + 1 Cc. glycerin extract No. 2.

The tubes were kept in the incubator for
twenty-four hours. Result:

No. 1: No change in starch.

No. 2: No change in starch.

No. 3: No change in starch.

No. 4: Traces of the dextrans. No sugar.

No. 5: Traces of the dextrans. No sugar.

No. 6: Traces of the dextrans. Trace of
sugar.

No. 7: Traces of the dextrans. Trace of
sugar.

No. 8: Traces of the dextrans, marked.
About 25 mgms. maltose.

No. 9: Three dextrans present, 121 mgms.
maltose.

No. 10: Three dextrans present, 181 mgms.
maltose.

No. 11: Three dextrans present, 208 mgms. maltose.

No. 12: Three dextrans present, 164 mgms. maltose.

The result of this experiment shows that the amylolytic ferment contained in the glycerin extract is very susceptible to salicylic acid. When present in a proportion of 7 to 22,000 or about 1:3000 it almost completely prevented any conversion into sugar. When present in a proportion of 8 to 22,000 a small amount (25 mgms.) of maltose was formed. When present in a very minute proportion, 1 to 22,000 and 2 to 22,000, the salicylic acid slightly stimulated the amylolytic conversion of starch into maltose.

On June 3, 1907, there were received test-tube marked No. 1, containing a piece of catheter, and a little perforated rubber sac containing a small piece of meat. Piece of meat shaken with aq. dest. This aq. dest. united with small amount of juice in test-tube. Fluid neutral; test for peptone negative. On boiling, some turbidity. Meat examined microscopically. Striation well preserved.

No. 2: Meat shaken with aq. dest., then filtered. Filtrate contained much coagulable albumens; was faintly alkaline; gave faint peptone reaction. Microscopically, striation still distinct.

Experiment No. VIII.

This experiment was made to determine the effect of salicylate of soda upon the action of the amylolytic ferment.

Tube No. 1: 10 Cc. 4-per-cent starch paste + 11 Cc. 0.1 per cent sol. salicylate of soda + 0 Cc. H₂O + 1 Cc. glycerin extract No. 2.

Tube No. 2: 10 Cc. 4-per-cent starch paste + 10 Cc. 0.1 per cent sol. salicylate of soda + 1 Cc. H₂O + 1 Cc. glycerin extract No. 2.

Tube No. 3: 10 Cc. 4-per-cent starch paste + 9 Cc. 0.1 per cent sol. salicylate of soda + 2 Cc. H₂O + 1 Cc. glycerin extract No. 2.

Tube No. 4: 10 Cc. 4-per-cent starch paste + 8 Cc. 0.1 per cent sol. salicylate of soda + 3 Cc. H₂O + 1 Cc. glycerin extract No. 2.

Tube No. 5: 10 Cc. 4-per-cent starch paste + 7 Cc. 0.1 per cent sol. salicylate of soda + 4 Cc. H₂O + 1 Cc. glycerin extract No. 2.

Tube No. 6: 10 Cc. 4-per-cent starch paste + 6 Cc. 0.1 per cent sol. salicylate of soda + 5 Cc. H₂O + 1 Cc. glycerin extract No. 2.

Tube No. 7: 10 Cc. 4-per-cent starch paste + 5 Cc. 0.1 per cent sol. salicylate of soda + 6 Cc. H₂O + 1 Cc. glycerin extract No. 2.

Tube No. 8: 10 Cc. 4-per-cent starch paste + 4 Cc. 0.1 per cent sol. salicylate of soda + 7 Cc. H₂O + 1 Cc. glycerin extract No. 2.

Tube No. 9: 10 Cc. 4-per-cent starch paste + 3 Cc. 0.1 per cent sol. salicylate of soda + 8 Cc. H₂O + 1 Cc. glycerin extract No. 2.

Tube No. 10: 10 Cc. 4-per-cent starch paste + 2 Cc. 0.1 per cent sol. salicylate of soda + 9 Cc. H₂O + 1 Cc. glycerin extract No. 2.

Tube No. 11: 10 Cc. 4-per-cent starch paste + 1 Cc. 0.1 per cent sol. salicylate of soda + 10 Cc. H₂O + 1 Cc. glycerin extract No. 2.

Tube No. 12: 10 Cc. 4-per-cent starch paste + 0 Cc. 0.1 per cent sol. salicylate of soda + 11 Cc. H₂O + 1 Cc. glycerin extract No. 2.

The glycerin extract No. 2 used in this experiment when employed was eight days old. The tubes were incubated for about four hours at 39° C.; the fermentation was then interrupted.

The examination of the contents of the twelve test-tubes showed that the salicylate of sodium in the small percentages used (1:2200 to 1 to 22,000) had no effect at all. The amount of sugar formed in the different test-tubes varied from 304 to 366 mgms., but any decided influence of the sodium salicylate was not demonstrable.

Experiment No. IX.

In the experiment salicylate of sodium was used in higher percentages.

Tube No. 1: 10 Cc. 4-per-cent starch paste + 9 Cc. 2-per-cent sol. salicylate of soda + 0 Cc. H₂O + 1 Cc. glycerin extract No. 1.

Tube No. 2: 10 Cc. 4-per-cent starch paste + 8 Cc. 2-per-cent sol. salicylate of soda + 1 Cc. H₂O + 1 Cc. glycerin extract No. 1.

Tube No. 3: 10 Cc. 4-per-cent starch paste + 7 Cc. 2-per-cent sol. salicylate of soda + 2 Cc. H₂O + 1 Cc. glycerin extract No. 1.

Tube No. 4: 10 Cc. 4-per-cent starch paste + 6 Cc. 2-per-cent sol. salicylate of soda + 3 Cc. H₂O + 1 Cc. glycerin extract No. 1.

Tube No. 5: 10 Cc. 4-per-cent starch paste + 5 Cc. 2-per-cent sol. salicylate of soda + 4 Cc. H₂O + 1 Cc. glycerin extract No. 1.

Tube No. 6: 10 Cc. 4-per-cent starch paste + 4 Cc. 2-per-cent sol. salicylate of soda + 5 Cc. H₂O + 1 Cc. glycerin extract No. 1.

Tube No. 7: 10 Cc. 4-per-cent starch paste + 3 Cc. 2-per-cent sol. salicylate of soda + 6 Cc. H₂O + 1 Cc. glycerin extract No. 1.

Tube No. 8: 10 Cc. 4-per-cent starch paste + 2 Cc. 2-per-cent sol. salicylate of soda + 7 Cc. H₂O + 1 Cc. glycerin extract No. 1.

Tube No. 9: 10 Cc. 4-per-cent starch paste + 1 Cc. 2-per-cent sol. salicylate of soda + 8 Cc. H₂O + 1 Cc. glycerin extract No. 1.

Tube No. 10: 10 Cc. 4-per-cent starch paste + 0 Cc. 2-per-cent sol. salicylate of soda + 9 Cc. H₂O + 1 Cc. glycerin extract No. 1.

The tubes were kept in the incubator at 39° C. for two hours and fifteen minutes; then the fermentation was interrupted and the amounts of maltose present in the flasks were determined, as follows:

Tube No. 1: Dextrins present, 155 mgms. sugar.

Tube No. 2: Dextrins present, 170 mgms. sugar.

Tube No. 3: Dextrins present, 186 mgms. sugar.

Tube No. 4: Dextrins present, 177 mgms. sugar.

Tube No. 5: Dextrins present, 189 mgms. sugar.

Tube No. 6: Dextrins present, 184 mgms. sugar.

Tube No. 7: Dextrins present, 194 mgms. sugar.

Tube No. 8: Dextrins present, 196 mgms. sugar.

Tube No. 9: Dextrins present, 194 mgms. sugar.

Tube No. 10: Dextrins present, 202 mgms. sugar.

The result of this experiment shows that even if present to the extent of one per cent salicylate of sodium has only a moderately inhibitory influence upon the amylolytic action obtained from the small intestine.

Experiment No. X.

This experiment was made to determine the effect of carbolic acid upon the action of the amylolytic ferment.

Tube No. 1: 10 Cc. 4-per-cent starch paste + 9 Cc. 5-per-cent sol. carbolic acid + 0 Cc. H₂O + 1 Cc. glycerin extract No. 2.

Tube No. 2: 10 Cc. 4-per-cent starch paste + 8 Cc. 5-per-cent sol. carbolic acid + 1 Cc. H₂O + 1 Cc. glycerin extract No. 2.

Tube No. 3: 10 Cc. 4-per-cent starch paste + 7 Cc. 5-per-cent sol. carbolic acid + 2 Cc. H₂O + 1 Cc. glycerin extract No. 2.

Tube No. 4: 10 Cc. 4-per-cent starch paste + 6 Cc. 5-per-cent sol. carbolic acid + 3 Cc. H₂O + 1 Cc. glycerin extract No. 2.

Tube No. 5: 10 Cc. 4-per-cent starch paste + 5 Cc. 5-per-cent sol. carbolic acid + 4 Cc. H₂O + 1 Cc. glycerin extract No. 2.

Tube No. 6: 10 Cc. 4-per-cent starch paste + 4 Cc. 5-per-cent sol. carbolic acid + 5 Cc. H₂O + 1 Cc. glycerin extract No. 2.

Tube No. 7: 10 Cc. 4-per-cent starch paste + 3 Cc. 5-per-cent sol. carbolic acid + 6 Cc. H₂O + 1 Cc. glycerin extract No. 2.

Tube No. 8: 10 Cc. 4-per-cent starch paste + 2 Cc. 5-per-cent sol. carbolic acid + 7 Cc. H₂O + 1 Cc. glycerin extract No. 2.

Tube No. 9: 10 Cc. 4-per-cent starch paste + 1 Cc. 5-per-cent sol. carbolic acid + 8 Cc. H₂O + 1 Cc. glycerin extract No. 2.

Tube No. 10: 10 Cc. 4-per-cent starch paste + 0 Cc. 5-per-cent sol. carbolic acid + 9 Cc. H₂O + 1 Cc. glycerin extract No. 2.

The glycerin extract No. 2 used in this experiment when employed was eight days old. The tubes were incubated for about two and a half hours at 39° C.; the fermentation was then interrupted. Result of the experiment:

Tube No. 1: Dextrins present, 267 mgms. sugar.

Tube No. 2: Dextrins present, 278 mgms. sugar.

Tube No. 3: Dextrins present, 288 mgms. sugar.

Tube No. 4: Dextrins present, 267 mgms. sugar.

Tube No. 5: Dextrins present, 287 mgms. sugar.

Tube No. 6: Dextrins present, 260 mgms. sugar.

Tube No. 7: Dextrins present, 297 mgms. sugar.

Tube No. 8: Dextrins present, 315 mgms. sugar.

Tube No. 9: Contents of tube lost.

Tube No. 10: Dextrins present, 323 mgms. sugar.

The result of this experiment shows that carbolic acid even when present to the extent of 2½ per cent did not much hinder the action of the amylolytic ferment in glycerin extract No. 2.

Experiment No. XI.

This experiment was made to ascertain the effect of aspirin (monoacetic acid ester of salicylic acid) upon the action of the amylolytic ferment in glycerin extract No. 2.

Tube No. 1: 10 Cc. 4-per-cent starch paste + 9 Cc. 0.2-per-cent sol. aspirin + 0 Cc. H_2O + 1 Cc. glycerin extract No. 2.

Tube No. 2: 10 Cc. 4-per-cent starch paste + 8 Cc. 0.2-per-cent sol. aspirin + 1 Cc. H_2O + 1 Cc. glycerin extract No. 2.

Tube No. 3: 10 Cc. 4-per-cent starch paste + 7 Cc. 0.2-per-cent sol. aspirin + 2 Cc. H_2O + 1 Cc. glycerin extract No. 2.

Tube No. 4: 10 Cc. 4-per-cent starch paste + 6 Cc. 0.2-per-cent sol. aspirin + 3 Cc. H_2O + 1 Cc. glycerin extract No. 2.

Tube No. 5: 10 Cc. 4-per-cent starch paste + 5 Cc. 0.2-per-cent sol. aspirin + 4 Cc. H_2O + 1 Cc. glycerin extract No. 2.

Tube No. 6: 10 Cc. 4-per-cent starch paste + 4 Cc. 0.2-per-cent sol. aspirin + 5 Cc. H_2O + 1 Cc. glycerin extract No. 2.

Tube No. 7: 10 Cc. 4-per-cent starch paste + 3 Cc. 0.2-per-cent sol. aspirin + 6 Cc. H_2O + 1 Cc. glycerin extract No. 2.

Tube No. 8: 10 Cc. 4-per-cent starch paste + 2 Cc. 0.2-per-cent sol. aspirin + 7 Cc. H_2O + 1 Cc. glycerin extract No. 2.

Tube No. 9: 10 Cc. 4-per-cent starch paste + 1 Cc. 0.2-per-cent sol. aspirin + 8 Cc. H_2O + 1 Cc. glycerin extract No. 2.

Tube No. 10: 10 Cc. 4-per-cent starch paste + 0 Cc. 0.2-per-cent sol. aspirin + 9 Cc. H_2O + 1 Cc. glycerin extract No. 2.

The tubes were kept in the incubator at 39° C. for two hours and thirty minutes; the fermentation was then interrupted. Result of the experiment:

Tube No. 1: No conversion of the starch at all.

Tube No. 2: Trace of dextrins. Trace of sugar.

Tube No. 3: Small amounts of dextrins, 87 mgms. sugar.

Tube No. 4: Small amounts of dextrins, 79 mgms. sugar.

Tube No. 5: Small amounts of dextrins, 85 mgms. sugar.

Tube No. 6: Larger amounts of dextrins, 178 mgms. sugar.

Tube No. 7: Larger amounts of dextrins, 184 mgms. sugar.

Tube No. 8: Larger amounts of dextrins, 202 mgms. sugar.

Tube No. 9: Larger amounts of dextrins, 201 mgms. sugar.

Tube No. 10: Larger amounts of dextrins, 189 mgms. sugar.

The result of this experiment shows that aspirin present in a proportion of 1:1100 entirely prevented the action of the amylolytic ferment. When present in a proportion of 1 in 2000 it still showed a strong hindering influence, but when present in a proportion of 1:2500 it had only a very feebly detrimental effect, while if present in the small proportion of 1:5000 it appears to have somewhat stimulated amylolytic fermentation.

Experiment No. XII.

This experiment was made to test with each other the amylolytic ferments of the various extracts on hand.

To four flasks containing 95 Cc. of a 4-per-cent starch paste 5 Cc. of the four extracts were added. The flasks were then kept in the incubator at 40° C. for eighteen hours. Then the fermentation was interrupted in the usual manner.

The sugars were determined by titration with Fehling's solution, calculated as maltose:

Flask 1: +5 Cc. extract No. 2, maltose formed 2.201 grms.

Flask 2: +5 Cc. extract No. 3, maltose formed 2.071 grms.

Flask 3: +5 Cc. extract No. 4, maltose formed 2.188 grms.

Flask 4: +5 Cc. extract No. 5, maltose formed 1.934 grms.

It appears from the result of this experiment that the glycerin extracts were fairly well alike in amylolytic power; it also appears that extract No. 2, which was about ten days old, had not lost any of its amylolytic power. Extracts Nos. 4 and 5 respectively obtained after calomel and after salicylate of soda medication showed no loss in amylolytic power.

On June 11, 1907, another rubber bag with some of the intestinal contents obtained through the fistula was received. These contents were collected after salol had been given. The mash presented the usual appearance. It did not exhibit any peculiarity of color or smell (no carbolic

acid smell). The mass was divided into two portions. One portion was mixed with water by stirring and the aqueous filtrate was tested for carbolic acid and for salicylic acid. Both tests were negative. The second portion was rubbed up with 100 Cc. of a 70-per-cent glycerin-water mixture, and the filtrate collected and designated as glycerin extract No. 6.

Experiment No. XIII.

1.795 of pure butter, obtained by extracting cream, was divided into two approximately equal portions; about 60 Cc. of hot distilled water was then shaken with each one of the two portions of butter fat. A little phenolphthalein solution was then added until the emulsion gave a faint alkaline reaction. Then 5 Cc. of glycerin extract was added to each of the two flasks; however, one flask was to be used as a control, hence the glycerin extract was boiled. The two flasks were then again titrated with N/10 sol. NaHO till faintly alkaline and the contents finally made up to 100 Cc., whereupon the flasks were placed in the incubator (39° C.) in order to demonstrate the presence or absence of lipase. (Glycerin extract No. 6 was found to be acid to phenolphthalein—3 Cc. N/10 sol. NaHO for 100 Cc. of the extract, or 109.5 mgms. of HCl per 1000 Cc. of the extract.) The result of the experiment showed that there was no active lipase present in extract No. 6.

Experiment No. XIV.

This experiment was made to test the amyolytic power of extract No. 6.

Tube No. 1: 10 Cc. 4-per-cent starch paste + 9 Cc. H₂O + 1 Cc. glycerin extract No. 6.

Tube No. 2: 10 Cc. 4-per-cent starch paste + 9 Cc. H₂O + 1 Cc. glycerin extract No. 6.

Tube No. 3: 10 Cc. 4-per-cent starch paste + 9 Cc. H₂O + 1 Cc. glyce:in extract No. 6.

The tubes were incubated for three hours at 39° C.; then their contents were titrated for sugar, with the following result:

Tube No. 1: 142 mgms. maltose.

Tube No. 2: 157 mgms. maltose.

Tube No. 3: 143 mgms. maltose.

The result of these tests showed a good

amyolytic fermentation after salol had been given in large medicinal doses.

Experiment No. XV.

Into each one of three flasks one gramme of egg-albumen, dehydrated in alcohol and desiccated in the drying oven below 100° C., was placed, then 70 Cc. of water was added; then to flask No. 1, 5 Cc. of N/10 sol. HCl, to flask No. 2, 5 Cc. of N/10 sol. NaHO, and flask No. 3 was simply kept neutral. Each one of the flasks received 5 Cc. of glycerin extract No. 6 and the contents were made up to 100 Cc. They were kept in the incubator at 40° C. for forty-eight hours.

The examination of the contents of the flasks showed very little proteolytic action upon the egg-albumen, as may be seen from the following table:

Filtrate tested.	Acid solution.	Alkaline solution.	Neutral solution.
Millon's reagent.	Faint reaction.	Faint reaction.	Faint reaction.
Effect of neutralization.	No change.	No change.	No change.
Subsequent acidifying with acetic acid and boiling.	Slight flocculent precipitate.	Slight flocculent precipitate.	Faint flocculent precipitate.
Addition of 1.5 vol. of sulphate ammonium solution.	Little change.	Little change.	Little change.
Complete saturation with sulph. ammonium.	Little change.	Little change.	Little change.

In other words, there had been very little proteolytic fermentation. The formation of coagulable albumens and albumoses had perhaps been a little more pronounced in the alkaline solution, so the trace of trypsin present was probably larger than the trace of pepsin present.

On June 13, 1907, a specimen of intestinal contents was again received. It had been collected during or after the administration of aspirin. The specimen was divided into two equal portions. One portion was used to make the glycerin extract No. 7. The other portion was first extracted with alcohol, then with water. The filtrates were collected and tested for aspirin. The tests were negative. A small portion of the

mass received had been reserved for microscopic examination. Different vegetable cells and fibers were found, also much undigested meat, but no starch. The glycerin extract was tested for its amylolytic and proteolytic power.

Experiment No. XVI.

To each one of three tubes containing 10 Cc. of a 4-per-cent starch paste, 9 Cc. of H_2O and 1 Cc. of glycerin extract No. 7 were added. The tubes, as usual, were kept in the incubator ($40^\circ C.$) for three hours. They then contained maltose as follows:

Tube 1: 172 mgms. maltose.

Tube 2: 173 mgms. maltose.

Tube 3: 173 mgms. maltose.

The result of this experiment shows that glycerin extract No. 7 obtained after the administration of aspirin contained a very active amylolytic ferment.

Experiment No. XVII.

This experiment was made to ascertain whether glycerin extract No. 7 contained an active tryptic or peptic ferment. Into each of three flasks 1 gramme of egg-albumen was placed. One flask received 5 Cc. $N/10$ NaHO, one flask 5 Cc. $N/10$ sol. HCl; each flask received 5 Cc. glycerin extract No. 7, the contents were made up to 100 Cc., and the flasks were then kept in the incubator at $40^\circ C.$ for forty-eight hours.

	Flask contents, NaHO.	Flask contents, HCl.	Flask contents, H_2O only.
Filtrate.	Cloudy.	Clear.	Faintly cloudy.
Test with Millon's reagent.	Positive.	Negative.	Very faint reaction.
Addition of $1\frac{1}{2}$ vol. sat. sol. ammon. sulphate.	Slight flocculent precipitate.	Faintly cloudy.	Faintly cloudy.
Complete saturation with ammonium sulphate.	Negative.	Precipitate.	Increase in cloudiness.
Neutralization subsequent acidulation with acetic acid.	Negative.	Negative.	Negative.
Test for peptone.	Negative.	Positive.	Negative.

The tests showed in the flasks with the

alkaline contents the presence of all of the fermentation products.

The result of this experiment showed that extract No. 7 contained a tryptic ferment acting quite well in an alkaline solution, very faintly in a neutral solution, and practically not at all in the acid solution.

EXPERIMENTS AFTER THE ADMINISTRATION OF ASPIRIN.

On June 20, at 11 A.M., two bags were received, one marked "Specimen June 20, 6 A.M." It contained about six to eight ounces of a rather dry, yellowish, greenish mash, which had no disagreeable odor. The microscopic examination of the mash showed some undigested, unchanged starch. A watery extract of the mash, filtered, gave no reaction for amylo- or erythro-dextrin, but a faint sugar reaction. A watery and an alcoholic extract of the above mash were both tested for aspirin with entirely negative results.

The following test had been devised for aspirin, and it had been found as delicate as the test for salicylic acid or salicylate of sodium. The test can be applied directly to a watery extract; an alcoholic extract has to be first diluted with water, and the alcohol, etc., chased away by prolonged boiling.

The watery solution containing aspirin is first strongly alkalized with a 10-per-cent solution of NaHO and boiled. Thereupon probably acetate of sodium and salicylate of sodium is formed. The next steps are the same as in the test for salicylate of sodium, namely, neutralization and slight acidulation with H_2SO_4 , and finally addition of dilute solution of ferric chloride, whereupon if aspirin has been present a violet color is shown.

The second bag received on June 20 was marked "June 19, 7 P.M." The contents of this bag were almost perfectly fluid, strongly alkaline to litmus, but acid to phenolphthalein.

Glycerin extracts were prepared in the usual manner: that from the contents obtained June 19 was designated as glycerin extract No. 8; that from the contents obtained June 20 was designated as glycerin extract No. 9.

Experiment No. XX.

To each one of three test-tubes containing 10 Cc. of a 4-per-cent starch paste + 9 Cc. H₂O, 1 Cc. of extract No. 8 was added. The amylolytic fermentation was kept up for five hours at 40° C. Result:

Tube No. 1: 175 mgms. maltose formed.

Tube No. 2: 181 mgms. maltose formed.

Tube No. 3: 184 mgms. maltose formed.

Experiment No. XXI.

The same experiment with 1 Cc. of extract No. 9. Result:

Tube No. 1: 151 mgms. maltose formed.

Tube No. 2: 150 mgms. maltose formed.

Tube No. 3: 133 mgms. maltose formed.

Hence it is shown that extract No. 8 was superior to extract No. 9 in amylolytic fermentative power.

Tests to demonstrate the presence of lipase in extracts No. 8 and No. 9 were negative.

Tests to demonstrate the hydrolytic tryptic ferment showed a rather weak action.

Some tryptic ferment was present, but not very much of it.

Experiment No. XXII.

July 13, 1907, the different glycerin extracts then still on hand were tested comparatively as to the amylolytic ferment. To each test-tube containing 10 Cc. of a 4-per-cent starch paste 9 Cc. H₂O was added, and to the various tubes 1 Cc. of extract of the different extracts. The amounts of maltose formed after a fermentation of three hours at 38° C. were:

Extract No. 3 formed 165 mgms. maltose.

Extract No. 4 formed 87 mgms. maltose.

Extract No. 5 formed 178 mgms. maltose.

Extract No. 6 formed 181 mgms. maltose.

Extract No. 7 formed 165 mgms. maltose.

Extract No. 8 formed 128 mgms. maltose.

Extract No. 9 formed 159 mgms. maltose.

On July 20, 1907, the different extracts on hand were tested as to the tryptic ferment present. However, it was found that the tryptic ferment had become much weakened by this time, and in all of the experiments faint traces only of alkaline albumen, coagulable albumen, dentero-albumoses, and peptone were found.

34 WASHINGTON STREET.

HOLD FAST TO THAT WHICH IS GOOD IN DIAGNOSIS AND THERAPEUTICS.¹

BY H. A. HARE, M.D.,

Professor of Therapeutics in the Jefferson Medical College of Philadelphia.

When called upon to deliver an address under such circumstances as these the question naturally arises as to whether it is best to deal with some topic which bears upon our profession in the abstract, attempting to lead one's hearers from their customary haunts at the bedside, or to speak of things which more directly concern them in their daily life. I have decided to follow the latter course because it has occurred to me that if our hearts be in our work, as they should be, no other theme can prove so interesting, and because it may profit us both to compare our methods of thought and practice, and so prepare ourselves the better for the pursuit of a profession in which it is essential that we combine with an ade-

quate commercial instinct the higher endeavor of doing good to those who are in that most desperate of all conditions, the condition of inability to help themselves.

It must not be thought from the somewhat Scriptural character of the title of my address that I am about to present you with a homily upon religious themes. My idea is to bring forward certain things which we are perhaps prone to ignore in our ceaseless endeavor to gain better ones, and so, often lose sight of old friends of real worth in the modern craze for something new. The spirit of the time is that of novelty, and this spirit is properly credited with most of the advances which have done so much to develop the science and art of our profession, for the spirit of novelty is perhaps the mother of advance in that it engenders the

¹An address delivered before the Maine State Medical Society, June, 1908.

restless state of mind which makes one discontented with what he knows or has, and urges him to learn more, and to possess better things. The spirit of novelty is, however, a spirit which produces good results, so far as new discoveries are concerned, only in those who are possessed of the genius of original investigation, and it will do best in that class when it is controlled by sane thought or well-regulated processes of cerebration. Results produced by research are always glittering in appearance, at least when they first appear, and time and trial alone serve to determine whether they are made of tinware, or of some precious metal which retains its glitter through the stress of time and actual use without becoming tarnished and useless. So bright is the gaudy glitter of all new things that men, as well as children, are often captivated by them and take them for precious metal, only to find that they have given the value of gold to burnished brass. In other words, the function of the medical man to-day is to be continually on the *qui vive* for new things, and having found them, to regard them with the caution of a conservative, but with none of his dilatory characteristics. This is the more important in our guild because the testing of a new and glittering discovery is not made upon ourselves but of necessity upon those who, by misfortune, have been forced to place their lives and happiness in our hands. To expose these persons to results of an undue faith in new goods is an error as costly as to fail to give them the benefit of the latest real advance, and to substitute a new and untried plan or method for that which has been well tested and universally recognized is also an act capable of being seriously questioned. It is because of this need for governing the spirit of novelty by the spirit of judgment that I have chosen as the title of my address "Hold Fast to That Which is Good." Our state of mind should be gravely judicial. It was said of a celebrated American statesman that in youth he had the judgment of age and in age the enthusiasm of youth. It should be said of us that at the bedside we have the keenness of original research tem-

pered by the judgment dependent upon analytical thought.

During the last hundred years the medical profession has passed through moods which closely resemble the moods of an individual—at one time optimistic, at another pessimistic; at one time ladling out potions with undue generosity, at another time withholding all medicines on the ground that they do nothing but harm; but on certain occasions exercising common sense, recognizing that some conditions were incurable by drugs, and also fully appreciating that many remedies, if properly administered, were capable of producing much good. In the earlier part of the past century much of the pessimism in regard to the administration of drugs arose from the fact that there did not exist any adequate conception of the physiological or pathological processes which were present in the patient's body, and also because, in not a few instances, the doses which were given were so heroic as to be quite capable of producing a condition which was worse than the disease. Later, with the advances which took place in physiology, pathology, and bacteriology, the seemingly utter hopelessness of attempting to combat perverted and diseased functions staggered the practitioner and drove him into a condition in which he was prone to consider that any struggle against disease was almost hopeless. At times this pessimism has, however, been swept aside by the further discovery that many of the remedial measures which have been employed with success in the past, upon a purely empirical basis, have in reality sound scientific standing.

One of the reasons why remedies fail to give the desired results lies in the fact that many physicians when examining a patient only seek for one cause of his illness, and having found this are entirely satisfied with their diagnosis, wholly neglecting the fact that the symptoms presented may be due to more than one cause. Thus, in a case which recently occurred in Philadelphia, a married woman was admitted to a hospital during the third week of typhoid fever in a condition of collapse, and was supposed to be

suffering from either perforation or hemorrhage from an intestinal ulcer. Abdominal section was performed, and to the amazement of the operator a ruptured extra-uterine pregnancy was found to be the cause of the condition of the collapse, a condition which would have been thought of first had it not been that the patient had been ill for some time with enteric fever.

The idea that uric acid is responsible for a host of morbid states was promulgated some twenty years ago, and having been accepted by physicians with an enthusiasm entirely justifiable, has reached the laity, who are now prone to regard every ailment as being due to this cause, when, as it is well known, uric acid itself is a normal product in the body, and even when injected into the blood in considerable quantities is incapable of producing any deleterious effects or grave symptoms. Finding that lithia, when mixed with uric acid, formed a soluble urate of lithia, the conclusion was at once jumped at that lithia would be a useful thing in the so-called "uric acid diathesis" to aid in the elimination of this substance, when as a matter of fact the action of lithia in the body is quite different from that which marks it in the test-tube, since it has a greater predilection for the acid sodium phosphate of the blood, which fluid it may damage by taking out this important ingredient. Again, lithia has been freely administered whenever the physician found an excess of uric acid and urates in the urine, when as a matter of fact this excess in the urine showed that the patient was getting rid of an excess of uric acid. As has been pointed out repeatedly, if lithia is ever needed for uric acid, it should be given to those patients who are passing too little and not too much of this substance.

After lithia had had its vogue a rival was introduced in the shape of the more expensive product known as piperazine, which was stated to be twelve times as powerful as lithia in dissolving uric acid. Later still, lycetol appeared as a rival of piperazine, and both of these substances were for a time popular until they had been weighed in the balance. Since then a series of other

uric acid solvents have been introduced, but they are aimed at a fetish.

It is, however, true that the desire for something novel has given us extraordinary advances in therapeutics. All the new synthetic drugs have appeared, and although many of them have been clad in gaudy garb, comparatively few have remained as well clothed when they have stood the strain of trial. Indeed, one of the most remarkable things in connection with the career of those which still remain to us is that they are now chiefly employed not for the purpose for which they were introduced, but for other purposes, as, for example, the coal-tar antipyretics, now given chiefly for the relief of pain; salicylic acid, introduced as synthetic quinine, now used as a specific in acute rheumatism; and chloral, devised by Liebreich as an anesthetic, which is used only as a hypnotic.

On the other hand, a number of instances in which old remedies still seem the best, either in the lines in which they have been used for years or in new lines, may be cited. One of the most important of these is the use of magnesium sulphate as a local anesthetic and antiphlogistic. It used to be thought that we possessed a number of drugs capable of acting as antiphlogistics, but the bacteriology of modern days has proved that local inflammations have a more complex nature than mere local hyperemia, and so antiphlogistics have been almost discarded. In magnesium sulphate, however, my former pupil, Dr. Tucker, of Philadelphia, has brought forward an old friend in a new dress. He has shown that a saturated solution of this old-fashioned remedy applied on compresses in erysipelas, orchitis, and a number of other acute inflammations causes the most extraordinarily beneficial results, and this in the face of the fact that erysipelas is usually met with in persons whose vital resistance has been impaired by some general malady like nephritis, diabetes, cirrhosis of the liver, or cardiovascular disease. Further, its use over painful areas is often most satisfactory in relieving pain. I have even controlled the severe pain of the extremities in locomotor ataxia

by binding it around the limb above the pain area.

Another ancient remedy used, in my opinion, far too little is the oil of cloves in the treatment of excessive cough and expectoration in pulmonary tuberculosis and bronchiectasis. Five to ten minims given hypodermically in sterile olive oil once or twice a day produces, in many instances, excellent results. The injection is painful for a brief space of time until the local anesthetic effect of the drug is exercised, but the relief obtained by the patient compensates for it so largely that the treatment is not objected to.

Another drug originally brought before the profession for a very different purpose has also proved, within the last few years, to be the sovereign remedy in the treatment of burns of every degree, namely, picric acid. Some of you may be familiar with the series of papers which appeared in the *THERAPEUTIC GAZETTE* a year ago in which this subject was carefully discussed, and also you doubtless recall the experience of the surgeons of the United States Navy who were called upon to treat the men who were burned at the time of the explosion on the U. S. S. *Bennington*. A one-per-cent solution of picric acid applied on gauze and covered with paraffin paper, cotton pad, and a bandage produced results which no other method approached. Similar results were obtained by the Japanese surgeons during the Russo-Japanese war. Kinslerberger of the Navy thinks that picric acid has a right to stand with antitoxin in diphtheria, mercury in syphilis, and quinine in malaria because of the excellent results which it produces.

How often do we turn to new remedies which are supposed to relieve renal and cardiac dropsy when adherence to the well-tried but ancient infusion of juniper berries and cream of tartar will be more productive of good results at much less cost. Another instance of the fact that an old-fashioned remedy should not be given up too readily for a new one is to be found in the effects of local applications of nitrate of silver as compared to those produced by some of the

new silver salts. Derby, in Boston, de Schweinitz in Philadelphia, and others have proved pretty conclusively that many of these silver salts are almost valueless as such, and that for true activity nitrate of silver is much to be preferred.

Are there any newer methods of treatment which have a firm basis formed by scientific research? I think there are. One of these is the treatment of hemoptysis by cardiovascular sedatives rather than by cardiac stimulants and vasoconstrictors, as, for example, the use of inhalations of nitrite of amyl to draw blood away from the bleeding point into the other vessels of the body, and the use of chloral and aconite both for this purpose and to produce quiet. I advocated the latter method of treatment in an address which I delivered before the Lehigh Valley Medical Association fifteen years ago.

Another practical application of a drug, both as a prophylactic and remedial agent, is the employment of urotropin or uritone in typhoid fever to prevent infections of the urinary bladder and gall-bladder, and to prevent the spread of the disease by destroying the bacillus of Eberth, so that it cannot be distributed by the patient. The researches of Crowe within the last few months have proved conclusively that the use of this drug results in the excretion by the mucous membrane of the gall-bladder of formaldehyde, and as this has a specific influence on the bacillus of Eberth, this viscus need no longer remain a hot-bed of future infection.

Still another comparatively little used, but nevertheless valuable, application of an old remedy is the employment of chloral in fairly large doses in scarlet fever throughout the course of the disease as a nervous sedative and urinary antiseptic.

Finally, let me take up for consideration a therapeutic point which from the standpoint of medicine and economics has for many years been fought over in your State, namely, the value of alcohol. Some years ago I think I proved pretty conclusively that administered in disease it could, under certain circumstances, materially aid the patient in combating infection.

The subject is one which is continually before the profession and the laity, and is often clouded by a failure to recognize the fact that a vast difference exists between the system of the human being in health and in disease. *Harper's Weekly* has within the last year discussed this matter in a very sane way. With the moral aspect of the question we, as physicians, have little to do when we are at the bedside of the patient, provided it is known that he is not addicted to this drug, and provided we take the precaution to prevent the alcohol habit being induced by its administration in the presence of disease.

There can be no doubt that Emerson was right when he stated that "the reason why artists, poets, and musicians love wine" and other narcotics is because they "add to their normal powers" and "transmute life's leaden metal into gold;" and again, that "it helps a man to escape the custody of that body in which he is pent up, and that jail-yard of individual relations in which he is enclosed."

There can be no doubt whatever that alcohol as a therapeutic agent has been greatly abused in the past, and that many cases of chronic alcoholism have developed from its use as a medicament, but these are not reasons why physicians should refuse to employ it properly and cautiously in certain cases in which clinical experience shows that it is really indicated. I am of the opinion that, even if we bear in mind its evil influences and the possibility of the development of a habit, physicians are deliberately failing to recognize a remedial agent of considerable value if with one stroke of the hand they remove it from their materia medica list.

Harper's Weekly, recognizing the everlasting condemnation which is heaped upon alcohol and the equally everlasting persistence in its use by the greater portion of the human race, quotes from a series of contributions made to the London *Lancet* in which it is asserted that alcohol is a trustworthy restorative, and that as an article of diet the moderate use of alcoholic beverages is for adults usually beneficial. This opinion also seems to have found support

by the investigations of the *New York Evening Post*, the editor of which submitted these statements to medical practitioners in New York, who, it seems to us, "hit the nail on the head" when they stated that alcohol in limited quantities is good for some people but not for others. As *Harper's Weekly* remarks, "most intelligent observers have noticed this fact for themselves." It is therefore evident that both doctors and laity regard the use of alcohol as something which is to be feared, and used with watchfulness and caution. *Harper's* further states that the idea that alcohol is "good for you" is pretty well exploded among people of common sense, but that the idea that it is invariably "bad for you," no matter who you are or how old, does not win its way either in theory or practice. In other words, to quote again from this same periodical, "whether it is good or bad, helpful or hurtful, depends on who you are, what age, what temperament, how employed, how fed, and also on what you drink and when and how you drink it." These remarks are essentially sane, and while they are made in connection with the question of the employment of alcohol by the well, they apply with equal force to the use of this drug in those who are ill.

The present day holds promise of progress in medicine which even the most advanced of us cannot describe. It has been one of the blessings of life that we have many remedies whose action we cannot explain because science has not advanced far enough to discover the disease process they influence nor the manner in which they produce their effects. It is to be hoped that some of the energy expended upon new remedies will before long be devoted to making the use of old ones more rational. We have had a scientific explanation of the effect of quinine in malaria, and with the discovery of the cause of acute rheumatism and the treponema pallidum we may be on the verge of knowing how the salicylates cure rheumatism and mercury cures syphilis.

There can be no doubt that we are prone to neglect remedial measures other than

drugs, partly because the patient is unwilling to take the trouble and partly because we are also governed by the same influence. The vogues of Christian science and psychotherapy show us that much can be done for ailing humans by mental effects. More can be done by mental effects plus physical

effects if we use hydrotherapy, electricity, exercise, and fresh air in a scientific way.

It is in the recognition of these facts that some of the members of our profession have earned the extraordinary success that they have achieved, and have cured where others have failed.

ON THE INDICATIONS AND CONTRAINDICATIONS FOR THE USE OF DIGITALIS.

BY A. D. BLACKADER, B.A., M.D.,

Professor of Pharmacology and Therapeutics, and of Diseases of Children, McGill University, Montreal.

Although digitalis is a drug regarded with fear and suspicion by some, yet most of us, I think, will agree that employed judiciously in suitable cases of failing circulation, it generally acts most satisfactorily. It is a drug with a very limited action, yet within these limits its action is a powerful one, and may render most effectual assistance to the physician who employs it correctly. Eichhorst,¹ in a recent article, says that he uses digitalis with entire confidence, but only under one condition, and that is when from any cause there arises a weak condition of the muscles of the heart. No tonic, he adds, has yet been discovered that will strengthen the weak heart as quickly and surely as digitalis. Einhorn² also writes: "Digitalis belongs to the best and surest medicinal remedies we have, but how and when it should be used is the question of the day." As my contribution to the symposium on the Treatment of Heart Disease, it is my desire in this paper very briefly to emphasize the conditions under which digitalis may and may not be used.

Digitalis is a drug which has been most carefully studied by pharmacologists and its action definitely ascertained; it has the disadvantage of containing several active principles which under favoring conditions readily undergo chemical change and either become inert or acquire a new action. A reliable preparation of digitalis in therapeutic doses produces, first, a definite stimulation of the functional activity of the car-

diac muscle; systole becomes more forcible—Gottlieb³ says, more than threefold more forcible; secondly, a stimulation of vagus inhibition, owing to which the heart is slowed and diastole lengthened; and thirdly, a distinct increase in the peripheral resistance to be overcome by the heart, an increase due to a constriction of the arterioles, chiefly in the splanchnic area, but also to some extent in those of the peripheral circulation.

As a result of these actions the output of blood at each contraction is much increased; intracardiac tension, especially that of the left ventricle, is raised; blood-pressure in the arterial system generally is increased, and the whole circulation becomes more rapid. This increase of functional activity produced by digitalis is temporary in character, developing slowly and passing off slowly, but can with careful administration of the drug be maintained for a long period without any indication of reaction. Under its prolonged influence, however, permanent results may be noted in the general nutrition of the heart, due to an increase in the blood supply through the coronaries, to a lengthening of the period of diastolic rest, and to a heightening of the intraventricular tension. In this respect digitalis differs markedly from other drugs which tend to produce exhaustion of the stimulated tissue. This effect on the nutrition of the heart is well illustrated by the experiment of administering digitalis daily to a young animal for two or three months. It is then killed and its heart compared with controls from

¹Indikationen und Methodik der Digitalis Therapie: *Deutsche med. Wochenschrift*, 1905, vol. xxxi, p. 49.

²Sammlung klinischer Vorträge, *Innere Medizin*, p. 511E, Volkmann, 1903.

³Zür Theorie der Digitalis Wirkung *Medizinische Klinik*, 1906, vol. ii, p. 955.

animals of the same litter. The digitalis heart will be found to weigh heavier and show distinct signs of hypertrophy.

We have therefore in digitalis a drug with very definite therapeutic indications, which judiciously employed may often prove to be a veritable gift of the gods, increasing the functional activity and nutrition of the heart, but which improperly and unnecessarily used may do distinct harm.

Digitalis is particularly indicated in all conditions in which we have to deal with a weakening heart muscle. It has for long been regarded as of distinct value in strengthening a failing circulation due to overstrain on the musculature of the heart arising from defects in one or more of its valves, and associated with impaired nutrition or commencing degeneration in the muscle fibers. This condition is most frequently met with in mitral incompetence, but may also be observed in the later stages of all forms of valvular defect. Only with a failing heart muscle, however, is digitalis of service. During the early stages of aortic incompetence or of mitral stenosis the musculature seldom shows any signs of giving way. In these lesions the quick, feeble, or irregular pulse and increasing indications of venous stasis, so frequently met with in mitral incompetence, and which especially call for the assistance of digitalis, are rarely seen, and until they appear digitalis is, in my opinion, better withheld.

In all forms of heart strain, however, the physician should not content himself with the administration of any drug, but should also direct his efforts to relieving the overstrain on the heart and maintaining its nutrition. For the first, rest in bed is often desirable and not infrequently necessary; in every case physical and mental strain must be moderated. To secure the second, attention must be given to insure proper oxygenation of the blood and the elimination from it, as far as practical, of toxic and catabolic products. If the hemoglobin content is defective hematinics should be administered.

Once compensation has been lost the physician must remember that time is required to effect its restoration. Patients are very apt to think that with the subsidence of un-

pleasant symptoms a cure has been effected, and much disappointment results when a too rapid return to the daily strain of life brings on a relapse of the old symptoms. Compensation, as complete as possible, should always be the aim of the physician, and can best be secured by prolonged rest combined with the judicious employment of digitalis. In suitable cases a still more perfect compensation may be obtained by the careful employment of graduated exercises. Commencing with passive movements of the limbs, followed afterward by active and finally resisted exercises, according to the Schott method, while the patient still maintains the recumbent posture, will slowly re-educate a heart to stand considerable strain.

In acute endocarditis especially, but also in acute myocarditis, the employment of digitalis is to be deprecated. In this condition absolute rest with low vascular tension is demanded; even regurgitation of the blood-stream is of value for the time being by lowering intraventricular pressure. All acute inflammatory symptoms must pass away completely before the administration of digitalis can be free from risk of harm. If stimulants to the general circulation at this time are demanded, strychnine, ammonia, camphor, and alcohol are to be preferred.

In cases with high arterial tension digitalis is at the first contraindicated; but in all these cases in course of time symptoms of heart failure will set in—sometimes suddenly, owing to acute overstrain; more frequently slowly, owing to defective nutrition and commencing degeneration. In both cases at this period benefit may be obtained from the careful use of digitalis or strophanthus. In these cases it is often advisable to administer at the same time one of the vasodilators or the iodides. A few years ago, under the delusion that high pressure was in all cases prohibitory to the use of digitalis, I employed only the vasodilators, or administered digitalis only in small doses and combined with full doses of the nitrites. I was surprised, however, to find that in many cases I had no results until I gradually raised the amount of my digitalis until full doses were reached and the

blood-pressure had gained its former level; only then did the edema disappear and the signs of stasis subside. Many trials have convinced me that in such patients digitalis is often demanded in fairly full doses to maintain blood-pressure at its high level, otherwise capillary circulation fails and venous stasis develops. High blood-pressure in certain individuals is a necessary compensation.

Digitalis is by many regarded as of questionable value in the acute infections. In these conditions its action on the heart muscle is counteracted by the pyrexia, by the depressing action of the toxins upon the heart muscle, and by the often associated vasomotor paresis affecting chiefly the vessels in the splanchnic area. My own experience leads me to believe that in many cases it can be employed with advantage, although the results obtained are often not very manifest. Caffeine and camphor appear to have a more definite action.

In neurotic conditions of the heart, in the various forms of arrhythmia, bradycardia, and tachycardia, digitalis is seldom if ever of service, and has no value and can only do harm in the treatment of all forms of heart block.

Occasionally in practice we meet with what has been termed essential cardiac inadequacy, in which the heart muscle appears to be congenitally weak. In these cases a prolonged employment of digitalis would appear to be indicated. Many physicians also regard the prolonged use of digitalis in moderate doses as of considerable value in cases of chronic heart debility due to malnutrition. I can see no objection to its employment provided digestion is not interfered with.

Digitalis is a drug which can be administered over long periods, and to which recourse can be had time and again without losing its effect, provided always that the nutrition of the heart is maintained. In many cases its action is greatly assisted by free purgation, by the use of one of the mercurials, and occasionally by venesection. In the presence of degeneration, whether fatty or fibrous, in the heart muscle its action fails.

A good, reliable preparation of the drug only should be employed; in my experience a fresh infusion from recently dried leaves of the English plant, or the freshly powdered drug, gives the best results.

LUXATION OF THE METATARSOPHALANGEAL JOINT.

SUBBOTITCH (*Deutsche Zeitschrift für Chirurgie*, Band 92, Heft 4-6) reports a case of this rare affection. The patient was a man fifty years of age, who had stepped backward from a window a distance of five feet and landed upon the anterior part of the left foot. He at once felt a sharp pain in the foot, and was thenceforth unable to walk. The author saw the patient an hour after the accident, at which time no swelling was observable. The foot appeared much broadened and the internal cuneiform bone was quite prominent; also the fifth metatarsal bone was very prominent at its upper end. Efforts at reposition were futile.

The x-ray showed a lateral luxation of the lower bones of the tarsus outward with fracture of the second metatarsal bone. The patient was anesthetized, and repeated efforts made to reduce the bones without success. In a little while considerable swelling of the joint occurred. A cutting operation was not undertaken because the functional result could not be foretold. For a few days the foot was kept elevated and ice applied, after which massage and passive motion were begun. At the end of the second week the patient was allowed to walk, but this was at first painful. Various apparatus for support were given to the patient, but he could not be induced to continue their use as he was more comfortable in the ordinary laced shoe. The foot remained absolutely flexible; there was not a trace of stiffness in the joint. It gradually grew better, and a year later the patient could walk on the floor without any support and without the slightest limp. Walking on rough surfaces caused pain, but this also soon improved. The foot gradually lost its arching and became quite flat. After three years the patient had so little difficulty that the author was of the opinion that he could not have been better if operation had been done.

EDITORIAL.

ANALGESIA VERSUS ANESTHESIA IN OBSTETRICS.

Our attention has been called to an interesting article on this subject contributed by Dr. Sir William Sinclair, Professor of Obstetrics and Gynecology in Victoria University, Manchester, England, to the London *Lancet* of May 30, 1908. As he well points out, the prevention, or relief, of pain has been one of the chief aims of medicine and surgery through all the generations of men, and again he states that nothing has stimulated the intellectual faculties of the medical profession toward this end more than the contemplation of the physical sufferings of women. After some further preliminary considerations Sir William proceeds to discuss the various methods which have been employed within recent years in obstetrics and gynecology for the relief of pain. In the first place, he advocates the use of morphine given in the dose of $\frac{1}{4}$ grain hypodermically toward the end of the stage of dilatation or during the process of expulsion, stating that it produces next to no effect upon the regular process of labor, and that it does not diminish the frequency nor the duration nor the force of the pains, and that usually within six minutes after the injection the sufferings of the patient are materially dulled or diminished.

We note with particular interest what Sir William has to say in regard to spinal anesthesia. He has gone over the literature of this subject quite thoroughly with particular reference to a number of German contributions to medical literature which have strongly advocated the use of the various local anesthetics by intraspinal injection. We have not room to quote this literature, but we are interested to note that he himself, as the result of what he has read and observed, comes to the conclusion that the effects of spinal anesthesia on the process of normal labor are simply disastrous. He thinks, however, that it finds its best appli-

cation in the severer operations, such as Cæsarian section, and that it may serve a useful purpose in some painful gynecological operations. Taking into consideration, however, the points for and against this method of relieving pain, he concludes that the technical difficulties and by-effects of the drugs so administered are such that it is safe to predict that there is no call for lumbar anesthesia in the private surgical and obstetric work of the medical practitioner in Great Britain, or in any other country.

Concerning the combined use of morphine and scopolamine, he finds that notwithstanding all that has been said in favor of this method, it may be considered a fact that it should receive its final condemnation as too dangerous both for mother and child, and unsatisfactory in most other respects. He quotes the conclusions which were reached by Voight, and also those of Gminder of Erlangen. Out of 100 cases observed by this last clinician, in only 58 was the action of the drug considered satisfactory. In 27 the process of anesthesia was interfered with to an important extent. In four cases complications appeared affecting the mother, and postpartum hemorrhage resulted in five cases owing to atony of the uterus. Furthermore, entirely owing to the narcotic, 11 children showed severe and 12 children slight signs of asphyxia, so that Hocheisen agrees with Sinclair that the danger and unreliability of this method prohibits its introduction as an analgesic in normal labor. Furthermore, many deaths have been reported, according to the statements in this paper. Some of the minor disadvantages consisted in prolongation of the intervals of the pains, loss of power in the individual contractions, and nausea and vomiting. Bardeleben agrees with Sinclair in considering that there need not be any further discussion as to the advisability of this plan.

On the other hand, Sinclair speaks with considerable enthusiasm of the employment

of morphine, alcohol, and cocaine for the relief of lumbar pain. He admits that he has not had a very large experience with the use of morphine and alcohol, but of the combination of the three drugs named he can speak with entire confidence, and, furthermore, he does not think that there is any material danger of developing the alcohol habit in patients by its use. Under the influence of these three drugs he states that the patient is so benumbed on the one hand that she does not suffer materially, and yet on the other hand is completely under the control of the obstetrician or surgeon. The cocaine is used only locally to the parts which are to be subjected to the knife or other trauma, but the morphine and alcohol are taken by the mouth. The exact plan he follows in cases of labor and in cases of dilatation of cervical stenosis is as follows:

Three-quarters of an hour before the time fixed for the operation the patient gets a full dose of morphine hypodermically— $\frac{1}{4}$ grain more or less. A quarter of an hour, or twenty minutes, before the time, she receives a soothing draught consisting of 2 or 3 fluidounces of whisky or brandy, which, if desired, may be masked by some vehicle and diluted. A favorite disguise for the alcoholic potion with him is a little fluid extract of licorice. As the result of this somewhat heroic method of treatment Sir William declares that at the appointed time the most timid patient becomes apathetic, and that any obstetric or gynecological procedure can be carried out with the help of a nurse and without the need of a skilled anesthetist. If a gynecological operation upon the genital tract is to be performed, the parts are exposed and thoroughly swabbed with a solution of cocaine, eucaïne, or novocaine, and afterward cleansed with 1-to-2000 bichloride solution.

THE TREATMENT OF ALBUMINURIA.

Twenty-five years ago the discovery of the presence of albuminuria in the urine was considered as being a definite manifestation of distinct renal disease. It is now universally recognized as having no such specific indication, and as often appearing

when the kidney is functionally disordered and not actually the seat of a pathological change. In other words, functional albuminuria is a well-recognized clinical condition. That the ingestion of excessive quantities of albumin can provoke albuminuria is questioned, although there are some experiments on record which would seem to indicate that the swallowing of a large number of eggs may produce a temporary leakage of albumin through the kidney. As a matter of fact, however, the majority of cases of albuminuria which are not associated with the presence of casts are functional. These instances are most frequently met with in early manhood or about the time of puberty; and Brown, in the *Clinical Journal* of January 22, 1908, states that Dukes, who has had extraordinary opportunity for studying this question amongst the pupils of the Rugby School in England, has found that 16 per cent of all the boys entering this school at the ages of thirteen or fourteen show albuminuria at times, and if under considerable nervous strain are very prone to develop this condition. As Brown states, these cases are usually anemic, "weedy youths," with a dull, heavy aspect and a tendency to fainting, and who have irritable hearts, the first sound of which is often feeble in character. This same class of cases not infrequently have periods of arterial spasm alternated with vascular relaxation, the arterial spasm developing under comparatively slight causes of nervous excitation. In some the albuminuria is associated with cold, clammy, congested extremities and a large, feeble easily compressed pulse, indicating lack of arterial tone. Severe exercise or cold bathing may in these cases be provocative of albuminuria.

It will be remembered that Wright some time ago called attention to the fact that albuminuria of a functional character may also be present in patients who manifest a lack of coagulability in the blood, and advised the use of calcium lactate for this condition. Indeed, Wright suggested, it will be recalled, that the internal use of calcium lactate might be employed for the purpose of making a differential diagnosis of albu-

minuria due to a renal lesion from the albuminuria of a purely functional nature, and Fox is quoted by Brown as having employed this treatment in seven cases, in all of which the albuminuria ceased, whereas in nine cases which were thought to be due to organic disease the use of calcium lactate failed to produce good results. Then, too, in some instances an excessive quantity of oxalates in passing through the kidney may cause renal irritation and so produce albuminuria, and this condition can be avoided by forbidding strawberries, rhubarb, tomatoes, pears, cabbage, and other foodstuffs which contain excessive oxalates, and by the internal use of nitrohydrochloric acid or benzoate of ammonium.

Readers of the THERAPEUTIC GAZETTE for the last few years will also recall that we have more than once pointed out in these pages that the old idea as to the evil effects of red meats, as compared with white meats, in cases of albuminuria and renal disease has been exploded, since there is nothing to prove that the red meats are more deleterious than the white, under these circumstances. Acting on this principle we have for a long time permitted patients under our care with albuminuria to have a greater quantity of meat than has usually been customary, and we have yet to see that its use in moderation has had any but an advantageous result. Taken in excess it may throw upon the kidneys the work of eliminating an excessive quantity of salts or organic matter which is inadvisable. But in moderation the use of meat tends to support the system, to make up for excessive waste, and to maintain health, and furthermore the patient is not fretted by having to avoid foodstuffs to which he has been accustomed all his life. Brown advances the view that the custom of restricting all forms of proteid in functional albuminuria and in nephritis has received far too much attention, and agrees with us that moderation in the use of proteid food is usually much better than its exclusion from the diet list for the reasons we have already given. The only thing to be borne in mind is that an excess of nitrogenous food should not be administered, but a happy medium maintained

by which too great a strain is not thrown upon the kidneys, and yet at the same time nutrition is preserved.

THE POSTURAL METHOD OF TREATING PULMONARY TUBERCULOSIS.

The best men in the profession have recognized for years that tuberculosis, above all other diseases, is essentially a condition that should receive no more medicine than is absolutely necessary for the purpose of combating symptoms, or conditions, which cannot be remedied by any other method. It has also long been recognized that in many cases of cavity in the lung, or of bronchiectasis, the patient can be saved much coughing if he is placed in such a position that the area which is chiefly diseased can be readily drained by gravity. Not infrequently placing a patient in this position morning and evening, and thereby enabling him to empty a cavity of accumulated secretion, will give him many hours of rest devoid of cough. It is therefore important to locate the physical signs in the lungs in order to advise the patient as to the attitude which is the best for him to maintain, either temporarily or for hours at a time. An interesting contribution to this subject has been made by Dr. Wise in the London *Lancet* of May 30. After speaking of the points which we emphasize, he illustrates what he has to say by pictures showing how a patient can be made to lie with comfort upon an inclined plane. The patient lies face downward upon a bamboo or wicker sofa which is elevated in the center six or eight inches above the ends. The feet are a little lower than the head, but the buttocks are considerably higher than the head. The result is that the bronchi readily drain into the larger bronchial tubes, and so on into the trachea, thereby very materially aiding the patient in bringing up from the lung the sputum which must be discharged. Of course, this attitude is the direct antithesis of the recumbent posture commonly maintained by patients who are bedridden. In some instances, for various reasons, this plan is not applicable, but when the sputum is copious and is brought up with some ef-

fort, we see much to commend in the method. Wise does not think that hemorrhagic cases are particularly suited to this plan, although we cannot see any marked contraindication to it. Another advantage of this method is that it produces a comforting sense of support to the chest, and tends to relieve pains in the lungs and in the chest walls.

PHOSPHATURIA: ITS SYMPTOMS AND ITS TREATMENT.

It was at one time thought that the presence of an excessive quantity of phosphates in the urine indicated a condition of nervous breakdown, and indeed it was considered as a direct evidence of the excessive nervous tissue waste. This idea has, however, been put aside. In the majority of instances the presence of phosphaturia is really an indication of lack of acidity of the urine, and it is particularly prone to develop in those cases in which an excessive secretion of hydrochloric acid in the gastric juice diminishes the acid in the body. As Brown well points out in the *Clinical Journal* of January 22, 1908, it is often advisable to determine the condition of the patient's gastric contents, since the relief of hyperchlorhydria will often indirectly relieve phosphaturia, and thereby decrease irritability of the bladder which may be due to the deposit of phosphates in this viscus. Then, too, phosphaturia is undoubtedly sometimes an evidence of marked tissue waste, and is often associated with neurasthenia and overwork, disappearing when rest or normal exercise after rest is taken.

For the relief of the irritable bladder produced by this cause we know of no remedy which exceeds in value urotropin or uritone, but in other instances full doses of benzoate of ammonium do equally well. The latter drug often seems to remedy not only the condition of the urine and so the condition of the bladder, but also exercises some influence upon metabolism, which relieves the cause of the phosphaturia in addition to producing an acidity of the urine which dissolves the phosphates. In some cases this ~~drug~~ drug may act as an intestinal antiseptic, and

so directly prevent the causes of phosphaturia. As already indicated, too, the correction of abnormal gastric secretion is also advisable where this seems to be the cause. Brown states that phosphoric acid is also a very valuable remedy in these cases, whereas, on the other hand, if a fish diet is given, which is usually rich in phosphates, phosphaturia will probably be made worse. He also agrees with us that nitrohydrochloric acid is a valuable remedy in some instances. Whether this acid, under these circumstances, does good by hurrying digestion, or whether it does good by stimulating the liver, is not known.

POISONING BY LEAD.

It has long been a well-known fact that chronic poisoning by lead can develop under the most extraordinary conditions and from sources which are entirely unexpected. Crockery ware, hair tonics, and water-supplies have frequently caused it, and it will be recalled that a number of years ago a very large number of cases of chronic lead poisoning developed in Philadelphia as the result of bakers employing chrome yellow for the purpose of imparting a yellow hue to cakes which had heretofore been colored yellow by virtue of the egg which they contained. It is interesting to note in this connection that Dodd, a surgeon in the English army, calls attention in the *Journal of the Royal Army Medical Corps* for June, 1908, to the development of chronic lead poisoning in soldiers who used chrome yellow for cleaning their yellow braid and facings. This chrome yellow is mixed with water and freely applied to the braid, upon which it is allowed to dry, and then the surplus is removed by vigorous brushing. Under these circumstances Dodd met with a number of cases of mild lead poisoning which he attributed to the introduction into the system of the lead either by reason of its dust adhering to the fingers of the soldiers until they went to their meals, when it was readily transferred to the mouth with food, or because of the inhalation of the dust produced by brushing their clothes. He also calls attention to the fact that he has seen

very severe cases of chronic plumbism develop in soldiers engaged in removing red paint from canisters in which old ammunition had been returned from abroad.

VESICULOTOMY IN THE CURE OF GONORRHEAL RHEUMATISM.

Under this title Fuller (*New York Medical Journal*, May 30, 1908) contributes an article based on his experience of twenty-three patients suffering from gonorrheal rheumatism, all of whom have been profoundly benefited by this operation, and all of whom have left his hospitals either entirely well or in greatly improved condition. In all there was a seminal vesiculitis to account for the focus from which the systemic absorption originated. Seventeen of his cases were cured as the direct result of the operation, and were well when last seen. Of the remaining six, two got well after the operation and remained so until they contracted a fresh attack of gonorrhea, when rheumatic symptoms reappeared in a mild and transitory form. Two other patients on account of sexual excess during convalescence suffered from relapse, but ultimately convalesced entirely. Two other patients who had exhibited an extremely chronic condition relapsed, one after being well eight months, one after having been relieved three months. In both these cases—destitute individuals leading unhygienic lives—there was a recrudescence of tenderness and inflammation with the rheumatic relapse.

This contribution of Fuller's is of especial interest in relation to the enthusiasm recently manifested in regard to the use of the antigonococcic serum. To those who have followed the literature dealing with this latter remedy, it is apparent that its benefits yet remain to be proved. Of the many cases reported as cured because of the use of serum, it is obvious that a large number ran a course in no way different from that commonly observed under other forms of treatment. On theoretical grounds the serum treatment should prove efficacious, but the clinical evidence, though encouraging, has not yet become convincing.

Fuller's method of treating gonorrheal rheumatism is based on the undoubted fact that such rheumatism does not occur without a focus or foci of infection from which there is an absorption of toxins; by obliterating this focus the resultant disease will be cured. It is noteworthy that in a certain proportion of his cases the gonorrhea was of such long standing and the local symptoms were so slight that the possibility of the seminal vesicles being the source of the affection had not been seriously considered, these patients having received medical and orthopedic treatment, the latter usually to their detriment.

Fuller's uniform success is surprising, since, though doubtless, as he contends, the infecting focus is usually in the seminal vesicles, it lies in a certain proportion of cases in the follicles of the prostate. This is shown by the fact that in some chronic cases of rheumatism, when the seminal vesicles are neither tender nor swollen nor distorted by previous inflammation, a systematic treatment directed to the prostate alone will bring about a cure. He notes that in chronic cases, after vesiculotomy, pain disappears in a week or ten days. At the end of two weeks massage of the affected joints can be prescribed. In very chronic cases two or three months of massage and exercise may be required before the joints are properly limbered.

When it is remembered that certain forms of chronic gonorrheal rheumatism are attended by the maximum of pain, are followed by ultimate complete ankylosis, and respond not in the least to either medical or orthopedic treatment, manipulation usually making them worse as long as the toxins continue to be absorbed, it seems well worth while when such cases present themselves, after having searched in other parts of the body for the focus of infection, to at least examine carefully for chronic involvement of the seminal vesicles, and if this be found Fuller's proposition, by means of which the cause of the disease is attacked directly and abolished, seems not only more rational but, according to the report quoted, far more successful than any other form of treatment heretofore proposed.

SUDDEN DEATH FROM PLEURAL REFLEX.

It has become an established part of medical belief, based upon many corroborative published cases, that surgical intervention, when it concerns the pleura or lung, aside from the danger incident to entrance of air into the pleural cavity, of collapse, or of hemorrhage, may be followed either immediately or shortly after by sudden death which cannot be explained by autopsy findings. These cases of death have occurred from a procedure as trifling as the introduction of an aspiratory needle into the pleural cavity, or have followed more extensive intervention, the immediate traumatism of which the patient apparently sustained well. In particular they have been noted as sequent to sponging of the pleura or its irrigation, and have occurred in the course of a surgical dressing days or weeks after the original operation has been performed. There is little doubt but that some of these deaths can be attributed to pulmonary or cerebral embolism, in which case there should be no difficulty in corroborating the cause by autopsy. There remains, however, the large number to be accounted for in which there are no autopsy findings. The customary explanation of this unfortunate sequel of thoracic surgery is that the reflex is of vagal origin, cardiac inhibition occurring as the result of stimulation of the terminal nerves of the pleura or of the alveolar lung area.

Körte and Lenhartz note some form of collapse in 10 per cent of their cases of pulmonary surgery. Capps and Lewis (*Surgery, Gynecology, and Obstetrics*, August, 1908), as the result of a laboratory investigation, conclude that these sudden deaths incident to thoracic surgery are of either the cardioinhibitory or vasomotor type, or a combination of these two. Cardiac inhibition, a reflex of central origin, is characterized by slow pulse, marked fluctuations of pressure between systole and diastole, combined with slow respiration. The condition is usually transitory and recovery takes place. The vasomotor type, which may be either central or peripheral, is characterized by rapid, running pulse, without

tension, by shallow respirations, and by death from vasomotor paresis. The authors quote Brodie and Russell to the effect that excitation of the pulmonary branches of the vagus produces the most marked reflex cardiac inhibition, similar irritation of neither the cardiac nor the lower fibers causing anything like the same effect. Indeed, there is a very close connection between the respiratory tract and the cardioinhibitory center, active stimulation of the nasal mucous membrane at once arresting the heart, as does almost in the same degree stimulation of the laryngeal mucous membrane or the nerves supplying the alveolar portions of the lungs. The nerves of the trachea and larger bronchi are much less sensitive.

The practical results to be derived from these laboratory studies are of considerable importance. In the cardioinhibitory type of collapse the use of atropine on theoretical grounds may be advisable. From this type, however, recovery usually takes place, the condition being a transitory one. In the vasomotor type atropine is certainly futile, and indeed Capps and Lewis consider that it may be distinctly hurtful. It is in this type that intravenous injection of adrenalin is particularly applicable, together with the means usually adopted for the raising of blood-pressure—*i.e.*, bandaging the extremities, lowering the head, intravenous injection of normal saline or even direct transfusion of blood, supplemented, of course, where the respiratory center is markedly affected, by artificial respiration. From the standpoint of prevention the avoidance of all possible traumatism is indicated, and particularly of such traumatism as is likely to affect the alveolar portion of the lung, as for instance that incident to the use of a trocar and cannula too long or penetrating more deeply than necessary, or of a drainage apparatus which rubs directly against the lung substance.

THYMUS DEATH.

In recent years there have been reported an increasing number of cases of sudden death, often occurring in the course of trifling operations, and usually in young

people, for which there was no adequate cause other than what is termed status lymphaticus, which is supposed to be connected with some abnormality of the thymus gland. In a number of these cases the thymus gland has been found distinctly enlarged and a condition termed laryngismus stridulus is present, in which death occurs rapidly in babies or children without forewarning, with suffocating symptoms. There is an almost universal belief to the effect that a fatal issue is due in such cases to the acute congestion of the thymus gland, which exerts mechanical pressure and occludes the larynx. Although it is true that the thymus gland corresponds in type with the lymphatic glands in general, there can be little doubt but that it has an internal secretion affecting metabolism. That it is not essential to life or growth is shown by the fact that it can be removed without causing death, but that it is accessory and has a distinct function which can be taken up by another gland is demonstrated by the fact that simultaneous extirpation of the thymus and the

spleen always results fatally. That its function is exerted only during the period of active growth is apparently demonstrated by the fact that it atrophies with age and disappears about puberty. Its anatomical and physiological relation to the thyroid seems to be demonstrated, since it seems to be quite unnecessary to the economy when the thyroid is removed, and if it be removed itself less thyroid gland is required to carry on the proper metabolism of the system.

McLennan holds that the cause of death in both status lymphaticus and laryngismus stridulus is not mechanical pressure, but is incident to the alteration of the internal secretion, and notes that after goitre extirpation sudden thymus death has occurred, the thymus in these cases having been found enlarged at autopsy. These facts would seem to indicate that thymus extirpation, which in itself is not a difficult operation, unless it be complicated by impending death from suffocation, is likely to be more frequently practiced than has heretofore been the case.

REPORTS ON THERAPEUTIC PROGRESS.

NOTES ON THE JUNGLE PLANT (COMBRETUM SUNDIACUM).

SILKWORTH, in the *New York Medical Journal* of May 30, 1908, makes an interesting report in regard to this remedy. He believes the vast majority of those addicted to morphine would, beyond doubt, discontinue its use promptly were it not for the physical torture which would almost immediately supervene. They use the drug from necessity, not from desire. There are unfortunate cases in which neurasthenia or some peculiarity of constitution renders a permanent withdrawal of the drug almost impossible, and to this limited class may be attributed the origin of the term morphinomania, a morbid craving for morphine. In opium smoking, the pipe itself, the lamp, and associations are powerful factors in considering the possibilities of a permanent cure. There are many who, long after they have discon-

tinued the drug, will continue to light each night the small lamp used in preparing the opium for smoking, so that after a few years' use of the drug these are the habits they crave possibly more than the opium itself. A more healthy and humane conception by physicians of drug addiction will do much toward eliminating the habit and will turn to legitimate channels the thousands of dollars which now fill the pockets of advertising frauds.

A party of Chinese wood-cutters were presumably the first to discover the properties of the drug which is now used extensively as a cure for the opium smoking habit in the Federated Malay States. The plant is a large climber, with a long, woody stem often reaching a height of one hundred or more feet. In the "Materials for a Flora of the Malayan Peninsula" it is described botanically by Lieutenant-Colonel Sir

George King, and is shown to belong to the order *Combretum sundiacum*. Sir George Wart, in a dictionary of the economic products of India, mentions two species of the genus as being used in native Indian medicine, but with no details as to their uses or properties.

In preparing the drug, the branches and leaves are chopped into pieces about one and a half inches in length; after drying the woody portions are separated from the leaves, and both the bark and the leaves roasted, the leaves to a less extent than the bark. Upon completion of this process the two portions are mixed together again.

The infusion is prepared by taking, for example, ten ounces avoirdupois of the roasted drug and mixing with about four gallons of water. This solution is kept boiling for three hours, being loosely covered to prevent too rapid evaporation. The liquid is then strained and is ready for use. The author does not believe that a fixed rule for prescribing can be laid down, but in general the method of administration to an opium smoker would be as follows:

Whatever the daily amount of opium the person habitually smokes, that amount is to be mixed with the infusion. The average allowance would be from sixty to one hundred and twenty grains, although beyond doubt a considerable quantity of the alkaloids are not absorbed into the system of the smoker. If, for example, one hundred and twenty grains had been the daily allowance, then two twenty-five ounce bottles of the infusion A and B are used. Into A is put one hundred and twenty grains of burnt opium (that is, prepared the same as if for smoking). From the bottle A one and a half ounces is given to the patient and one and a half ounces from bottle B is put into bottle A. This is repeated each time a dose is taken, usually three times a day. Bottle A maintains its bulk, although continually decreasing in its opium contents until bottle B is exhausted. At the end of this course a second treatment is given, beginning with about one-third the initial amount of opium used, and upon completion of this the patient should be cured. With twenty-five ounces

in the bottle and one and a half ounces at each dose, there would be about sixteen doses in each bottle. Each dose would represent a decrease of one-sixteenth of the total amount of opium left from each succeeding dose up to the seventeenth dose on the sixth day, or until bottle B is exhausted. There would then be no further change to the thirty-second dose, when the entire one hundred and twenty grains would have been taken and the contents of the two bottles exhausted.

The remedy, while not a panacea, seems to offer the best medium of reduction thus far given to the profession, and while the experiments of the author have been confined solely to the practical demonstration of the plant, he is led to believe that there may be present in the remedy an active ingredient, antiopium in its properties. The burnt opium in gradually decreasing doses certainly plays an important rôle in the treatment, but this alone, or in combination with any other form of medication heretofore known, has been, on the whole, unsatisfactory.

Both physician and patient must work together in harmony, and the suffering incident to the discontinuance of a powerful drug must be mitigated as much as possible, if permanent results are to be obtained.

THE TREATMENT OF GASTRIC ULCER.

In the *St. Paul Medical Journal* for June, 1908, GREENE sums up an article upon this topic as follows:

1. Medical and surgical statistics are alike faulty and misleading.
2. A deplorable amount of operative work has been done in purely medical cases.
3. In most instances neither before nor after operative interference has there been a proper scientific use of modern diagnostic or therapeutic procedures.
4. Simple ulcer is always medical. Chronic ulcer is only surgical when persistently recurrent. Cases of moderate stasis and pylorospasm are not primarily surgical. Hemorrhagic cases are seldom fatal and yield a lower mortality under medical than

under surgical treatment. Surgical relief is advisable in painful perigastric adhesions which are resistant to medical measures. Perforation is a purely surgical condition.

5. Proper medical treatment and after-control reduces recurrence to a minimum.

6. The absence of this control in public clinics permits and justifies a freer recourse to surgery than would be permissible in private practice.

7. In properly controlled private cases there is but a negative mortality.

8. The rigid plans of treatment and time divisions are an absurdity, and the practitioner should be governed by a knowledge of the fundamental principles involved, the clinical course, known conditions as to gastric secretion, and yet more as to mortality and the individuality of the patient.

9. Absolute rest, mental and physical, the wise employment of alkalies, proper nourishment, demanding little of motility and secretion, exciting a potent digestive fluid rather than a profuse one, easily assimilable and nutritious, and proper psychotherapeutic control comprise all measures usually found necessary.

10. Hospital care and the services of a trained nurse are of great importance.

11. Patients should be kept under direct observation and control for at least one year after apparent cure.

12. Results should be reported after five years.

13. Cure is not complete until all local tenderness, rigidity, and pain are relieved, blood absent from the stools, and the previous best weight of the patient regained. The requirements on the part of the surgeon should be quite as definite, and in both the claim to cure should be tested by a long immunity period.

can be had. The majority prescribe a drug which, if good, may save life, without inquiry into its character or method of preparation, and often in a form which the least study would convince them must be inert. A surgeon who displayed similar carelessness as to the preparation of his ligatures and dressings would speedily be brought to his senses by a suit for malpractice. We medical men must face our responsibilities in this matter of dishonesty and incompetence in the drug trade, wholesale and retail, or reap the inevitable harvest of deserved loss of confidence and of our own self-respect.

The active principles of digitalis are glucosides, which decompose readily in the presence of moisture, yielding inert or toxic products. In order that we may be sure of giving efficient digitalis, and not inactive or irritating digitalis decomposition products, the following conditions must be fulfilled: (1) The leaves must be from plants of the second year's growth, picked at the beginning of efflorescence, freed from stalks, and carefully dried. (2) The dried leaves must be kept absolutely dark and free from moisture in sealed tin or glass containers, and for not more than one year. (3) The preparation dispensed must be freshly made from these leaves in exact accordance with the method prescribed by the U. S. P.

This obviously requires intelligence and honesty of all concerned in each step of the process. A good physician, in the present state of our knowledge, should not concern himself overmuch with pure digitalis glucosides. He should learn from personal investigation which druggists can be trusted to keep good leaves, to keep them dry and dark, and to make a fresh preparation every time it is called for. In New York, the author states, he can count on a few apothecaries of this kind, and he invariably sends patients to them.

The worst digitalis preparation, the author asserts, is an infusion made by diluting the fluid extract, thus precipitating all of its active ingredients. This is a common practice. Another, of like kind, is an infusion made by diluting a so-called mother

THE USE AND ABUSE OF DIGITALIS.

In the course of an excellent article on this topic by JANEWAY in the *American Journal of the Medical Sciences* for June, 1908, he has this to say in regard to inefficient preparations. Few practitioners have the remotest idea how little good digitalis

liquor. This was once used in a hospital with which he was connected, and digitalis came into bad repute with the staff. Other inefficient forms are the many tablets or pills containing digitalis or digitalin. The only solid form in which digitalis should be given is the freshly powdered leaf in capsule or pill. The commercial digitalins are all impure mixtures, made, as a rule, from digitalis seeds, and should only be tolerated where very mild effects are desired over a long period of time.

The use of combinations of heart tonics, usually with nitroglycerin, now sold in tablet form, is one of the most deplorable developments in therapeutics to-day. The practitioner who allows himself to give powerful drugs in this way fails to learn the action of any one of them. If he thinks at all, he becomes a skeptic; otherwise he remains little more than the agent of some manufacturing pharmacist.

The fluid extract of digitalis is far too strong to permit of easy regulation of dosage. The writer does not favor its use, as he has never seen satisfactory results from it.

There remain two official preparations, the infusion and the tincture, besides the powdered leaves, which, under the conditions named above, may be considered trustworthy. The choice of one of these must be largely a personal matter. One should learn how to give a single preparation and regulate its dosage under various conditions. The author's experience leads him, for most purposes, to favor the infusion, chiefly because one can be reasonably sure of having it freshly made if so specified. In case after case supposed to have been treated with digitalis without benefit, he has seen prompt results follow its use.

THORACOSTOMY IN HEART DISEASE.

The *Lancet* of July 4, 1908, publishes an interesting paper by Dr. Alexander Morison, in which some observations are made concerning an operative method devised to afford relief to certain cases of enlarged heart. The enlarged area of pulsation and

the forcible thrust against the chest wall in cases of greatly hypertrophied heart are familiar features in the clinical picture of certain forms of cardiac disease. Some years ago Dr. Morison suggested that the severing of pericardial adhesions by surgical methods might eventually be a practicable procedure, and again in a paper read before the Æsculapian Society, and published in the *Lancet* of July 28, 1906, he suggested that the hypertrophied heart needed more room to work in and that it was possible that in the future a means might be found to provide such increased room by surgical methods. He now gives references to the actual carrying out of operations specially devised for this purpose with which he has recently become acquainted. He finds that as long ago as 1902 Professor Brauer proposed that the costopericardial adhesions in cases of adhesive pericarditis should be separated, and operations were carried out upon two of his cases by Professor Petersen and Dr. Simon, pieces of several ribs being resected in the first case, while in the second case a portion of the sternum was also removed. A third case was operated upon by Dr. Simon, and Dr. Morison is privately informed that a fourth case has been operated upon under Professor Brauer's supervision. Professor Wenckebach has also published a case in which parts of several ribs and their cartilages were removed. Dr. William Mackenzie, of Melbourne, has independently suggested the removal of portions of the sternum and ribs in order to free the heart from costopericardial adhesions.

Still more recently Dr. Morison has developed the principle of affording relief to intrathoracic pressure by operative procedure by applying it to a case of cardiac pain associated with enlarged heart due to aortic valvular disease, with a view to afford increased room independently of any question of relief of tethering due to pericardial and costopericardial adhesions. The clinical features of the latter case are described in detail in his paper. The patient was a clerk, aged nineteen years, with aortic valvular disease associated with severe attacks of pain. After rest and medical treatment

had failed to give relief Mr. Ewen C. Stabb, at Dr. Morison's suggestion, performed on May 1 an operation, removing four and a half inches of the fifth rib and five and a half inches of the sixth. The results of the operation to date appear to have been satisfactory, and there has been considerable relief to the pain from which the patient suffered.

It is obvious that the greatly hypertrophied heart has to make room for itself in the closed thoracic cavity and the bulging of the precordium in children is an evidence of the force which it exerts upon the more easily yielding thorax in early life; consequently from a theoretical point of view the suggestion to afford increased room for the heart or to lessen the resistance which it has to contend against is one which has much to commend it. Practically, however, the procedure is a somewhat serious one to recommend to a patient with grave organic disease of the heart, involving as it does anesthesia with a more or less extensive operation. Dr. Morison himself deprecates laying too great stress upon the result in a single case. Moreover, the time which has elapsed since the operation is very short. The further progress of the case is awaited with interest, and meanwhile Dr. Morison and Mr. Stabb are to be congratulated upon the result so far obtained. One cannot but feel, however, that the cases submitted to this operation will require most careful selection, even should the permanent results prove as encouraging as those immediately obtained.

NATURE AND TREATMENT OF LEUKEMIA.

The *Medical Record* of July 11, 1908, deals with this interesting topic as follows:

The primary diseases of the blood constitute but a lately opened chapter of human pathology, yet they have formed a subject of such interest both to the research workers and to the practical clinicians that their symptomatology and the pathological changes occasioned by them in the human organism have received much special attention. The cause of them, however, has re-

mained undiscovered, and the treatment has been very inefficient. It may be assumed that parasitic etiology is improbable, since the attempts of Mosler and Bollinger to infect susceptible animals by the leukemic blood were completely unsuccessful, and like experiments carried out by Schupfer with patients suffering from incurable carcinomatous disease could produce no leukemic changes.

Most interesting findings in regard to the pictures of the blood seen in leukemias have been lately published by Grüneberg (*Medizinisch-naturwissenschaftliches Archiv*, Vol. I). His examinations of embryos has shown that human embryonal blood answers completely to the picture of lymphatic leukemia, and even the increase of normoblastic red cells after the sixth month makes the blood quite comparable to the condition found at certain stages of the disease, when compensating processes seem to be most evident. The essence of the leukemias, therefore, is the return of the blood to its embryonal composition so far as its cellular elements are concerned. In an article in the *Berliner klinische Wochenschrift* of June 15, 1908, Grawitz indeed says that on many occasions the leukemia is nothing but the unlimited attempt at blood formation which has been called forth by some such cause as chronic inflammatory and suppurative conditions. Ziegler and Tochmann have published a case in which a simple neutrophile leucocytosis of 28,000 leucocytes called forth by a chronic staphylococcus infection changed to a leucocytosis of 240,000 cells, mostly myelocytic in character.

Grawitz reports the success he has had in the treatment of leukemias during the last three years—that is, since the x-rays have been utilized for this purpose. Ten of the twenty-six patients suffering from myelogenous leukemia recovered under treatment with the rays, the spleen diminishing to normal size and the blood assuming its usual picture. Three of the ten had relapses, but a second course of treatment again proved efficacious in curing them. Only one patient with lymphatic leukemia was cured of the disease, if freedom from the

signs of the affection for the period of two years constitutes a cure. In general, this type of the disease proved quite refractory to the *x*-ray therapy. However, up to the introduction of this treatment the outlook for all leukemic patients was very dark indeed. If one type of the disease even can be successfully controlled, it means that a great many victims may be annually saved. It seems probable, too, that early diagnosis and the improvement of the technique of treatment will increase the percentage of the cures.

SERUM DISEASE AS A CLINICAL MANIFESTATION OF ANAPHYLAXIS.

SAUNDERS contributes an interesting article on this topic to the *Interstate Medical Journal* for July, 1908. He states that very soon after the discovery and general use of antidiphtheric serum the profession became acquainted with a group of phenomena, following the hypodermic injection of normal, antitoxic, or bactericidal serum, to which the name "serum disease" is now applied. In general, these symptoms consisted of eruptions and joint pains occurring in a certain proportion of cases. Physicians regarded these symptoms as uncomfortable, though harmless, after-effects in susceptible individuals, and attributed the rashes to some toxic substance in the horse's blood-serum. This was a mistake. The symptoms observed were only a few of the phenomena which attend a very severe internal disturbance, due to the introduction of heterologous proteids in the circulation. Recent clinical and experimental investigations have revealed the fact that remarkable changes take place in the organism injected with the serum, so that the disturbance has been dignified by a special name—"Serum Disease."

Although manifest symptoms do not occur in more than one-third of all cases, the cellular reaction to the alien serum is probably present in every individual who receives an injection, and the phenomena of anaphylaxis may be observed to a greater or less degree, if the proper tests are made.

In some of the cases injected, varying

from 10 to 40 per cent, after a period of five to twenty days, the patient becomes restless, and may complain of lassitude and pain in the limbs. This is soon followed by the serum exanthem, which is often accompanied by severe itching and burning. The serum rash varies in character. Most often erythematous patches, rose-red in color, will be found covering various parts of the body. Next in frequency are urticarial lesions. Sometimes the eruption is distinctly scarlatiniform; occasionally it resembles measles. The eruption may be polymorphous, wheals, erythematous patches, and macules being observed on various parts of the body at the same time. Occasionally a typical erythema multiforme, or erythema iris, with severe constitutional symptoms, occurs, especially after repeated injections of serum.

A very striking symptom is edema of the skin, which may be present only in certain circumscribed spots, or more rarely involve the whole integument, giving the person a ghastly, bloated appearance. A very serious form is the hemorrhagic type, in which hemorrhages occur in the skin. Fortunately this is rare.

The disturbance likewise is shown in the mucous membranes. Erythematous spots may occur on the hard and soft palate. The fungiform papillæ of the tongue may be swollen, and give the tongue a raspberry appearance.

A very remarkable symptom, to which the author drew attention about ten years ago, is dysmenorrhea in women. When a young woman receives a dose of diphtheria antitoxin within two weeks of her menstrual period she is very likely to suffer severe pain, and an increase of flow at the subsequent catamenia.

Joint pains are frequently observed. One or more of the joints may become very tender to touch and to movement. Muscular pains are very common. Articular swelling may be present. The wrists, knees, hips, elbows, ankles, and shoulders are most frequently implicated.

That the disease is a general disturbance is proven by the fact that an elevation of

temperature is frequently present. The fever may be very high. Vomiting and diarrhea occur in a small proportion of cases. In 1899, after repeated injections of diphtheria antitoxin in the babies of the Bethesda Foundlings' Home, the author had the opportunity to observe in several cases the sensitizing effect of a previous injection. He found that many of the infants who had received an immunizing dose six weeks previously showed a very marked supersensibility to the second injection. The symptoms of serum disease, which are usually delayed a week or more, came on within a few minutes, and with much greater violence. The author reported these observations in the *St. Louis Courier of Medicine*, 1899. Although the explanation given then does not entirely harmonize with the present debated theories, the occurrence of a supersensibility and the clinical symptoms were clearly depicted.

The condition of anaphylaxis is sometimes remarkably protracted. Thus, in one instance, in a little girl who received an injection of antidiphtheric serum four years previously, another injection of the so-called globulin antitoxin produced violent symptoms in a few hours. In experimental anaphylaxis, Rosenau and Anderson found the condition persisting for several months. It is possible that this supersensitiveness may remain throughout life in certain individuals, and that it may be transmitted to offspring, as is the case in guinea-pigs.

The symptoms of this second reaction are very similar to those of the primary disease, but supervene very soon after the second injection, sometimes within a few minutes. There may be chill, convulsions, and sudden high fever. The respiration becomes very rapid, the pulse accelerated, and the patient shows great anxiety. In some cases a severe dermatitis, with local pain around the site of the injection, appears. Bolton reported a case of local gangrene, a condition that frequently occurs in anaphylactic rabbits.

As far as the author has been able to observe, no cases of death have occurred in human beings by the repeated injections of

horse serum, yet the severe symptoms which sometimes occur, and the fact that gangrene and death are so frequent in animals, convince the clinician that antitetanic horse serum is by no means a remedy which can be used carelessly or indiscriminately.

Another form of supersensitiveness occurs in certain individuals who have not had a previous injection of antitoxin. Quite a number of cases have been reported, and the author has observed a number himself, in which the immediate serum reaction occurred, and yet the patient injected had never before had a dose of horse serum. No explanation can be offered for these cases at present except that of idiosyncrasy.

Finally, another form of supersensitiveness is found in those rare instances in which sudden death occurs after an immunizing or curative dose of diphtheria antitoxin in those injected for the first time. Patients suffering with asthma, Graves's disease, and lymphatism are most apt to show this fatal supersensitiveness. Quite a number of cases have lately been reported. The symptoms in those fatal cases, in general, resemble those of animals made supersensitive to serum, and receiving a fatal dose. Severe dyspnea, rapid respiration, cyanosis, intense edema of the skin, are the prominent symptoms. The patients die from respiratory paralysis. There can be little doubt that the anaphylaxis in these patients is similar to that produced in animals, although we are entirely ignorant of the cause, and have, unfortunately, no way of recognizing its presence until after the serum injection.

An important condition often incident to the serum disease is that the general bacterial or antitoxic resistance of the body is lowered during the height of the anaphylactic stage. Several cases of diphtheria have been reported with relapses in this period. Cases have been observed of streptococcic infections, erysipelas, dysentery, and chorea which have improved under the serum injections, but rapidly become worse during the height of the serum disease. It may not be wise, therefore, to use an antitoxic or

bactericidal serum if its curative effect cannot be obtained before eight or ten days.

The following practical rules may be offered in the light of our present knowledge:

Curative sera are not the harmless substances we originally supposed.

Immunizing injections of serum should not be employed when isolation will prevent the disease with a reasonable degree of certainty and the children can be watched.

Serum should not be used in asthmatics, or those suffering from Graves's disease or the lymphatic constitution, except in developed diphtheria.

The use of bactericidal sera of doubtful value should not be encouraged, without careful consideration of all the possible bad effects from anaphylaxis.

If a second dose of serum must be given during the few weeks following a primary injection, small repeated doses are preferable to a large single dose.

On the other hand, one large initial dose is probably less harmful and far more effective than several small doses given over several days.

THE OPHTHALMO- AND THE CUTANEOUS DIAGNOSTIC REACTIONS IN TUBERCULOSIS.

In the *Albany Medical Annals* for July, 1908, LAIRD gives an excellent résumé of this subject. He calls attention to the fact that under the title "Die Ophthalmo- und Kutandiagnose der Tuberculose" Wolff-Eisner writes a volume of two hundred pages, making the first number for the year of Brauer's *Beiträge zur Klinik der Tuberculose* (1908, ix, i).

It is a complete review of the new subject, less than a year old, of "local reaction" tuberculin tests and contains much original material. Over 500 articles have appeared since June, 1907, many of which have been reviewed by the author. He gives 245 references to articles on this and related subjects. The credit of originating the ophthalmo-tuberculin test has frequently been assigned to Calmette, but Wolff-Eisner demonstrates his own priority in

suggesting its clinical use, and prefers the designation "conjunctival" to "ophthalmo-tuberculin" test, the term used by Calmette.

He recognizes the value of the subcutaneous tuberculin test, but thinks it is not entirely devoid of danger, besides producing severe general symptoms. The temperature must be carefully observed for some days before and after the test. The test cannot be readily given without certain apparatus for preparing dilutions, and its field has been somewhat limited. All these disadvantages are overcome or diminished in the new local reaction tests.

The technique of the tests, the results of clinical observation, and finally the theoretic consideration on which they are based, are discussed in turn.

Technique of the Cutaneous Test.—The skin is first rubbed with alcohol. The scarification need not be extensive and may be hardly more than a point. It may be made with any sharp instrument or with Pirquet's "Schaber." It is an advantage to have a platinum instrument, since it is so readily disinfected. There is, however, very little risk of infection. It is unnecessary to do more than reach the superficial lymph vessels, and it is an advantage not to draw blood. The scarification may be made through a drop of tuberculin previously placed on the skin, or the tuberculin may be applied after the scarification is made. A 25-per-cent solution of Koch's old tuberculin is used. Control vaccinations with sterile salt solution or with glycerin and carbolic acid solutions in the strength in which they are found in tuberculin (5 per cent, 0.1 per cent) should be made, as in certain individuals the skin is greatly irritated by the slightest traumatism. It is better to employ a separate lancet for the control test.

Technique of the Conjunctival Test.—The patient's head should be tipped well back and the under lid should be supported for half a minute with the finger after the diluted tuberculin is dropped in the eye. The eye should not be rubbed afterward. Wolff-Eisner uses a freshly prepared one-per-cent solution of Koch's old tuberculin

in 0.8 salt solution, and one drop is placed in the eye with a small glass pipette or dropper. The use of the purified tuberculin prepared by Calmette's method is considered unnecessary. Calmette's one-per-cent solution of purified tuberculin is in the author's opinion too strong and may do harm.

The Course of the Cutaneous Reaction.—In a positive reaction, after a few hours, a reddening appears which usually reaches its highest intensity between the twelfth and twenty-fourth hour. It may be moderate, marked, or excessive, may disappear within forty-eight hours or last for weeks. There may be, besides the hyperemia, exudation and infiltration, causing the formation of a palpable papule.

The Course of the Conjunctival Reaction.—After six to twenty-four hours the conjunctiva begins to redden, and in reactions of the mild grade nothing more is noticed. In reactions of the second grade the redness is more marked and there may be mucofibrinous exudate. In the third-grade reactions there are all the appearances of a severe conjunctivitis. When the reaction is very severe, boric acid solutions, or a combination of three-per-cent cocaine solution with a one-tenth-per-cent solution of adrenalin, are found useful by the author in relieving the discomfort.

He has observed no unfavorable results from the test. At least 10,000 tests have been reported by other workers. In very few cases have harmful effects followed. Still, much care must be used. The author does not consider ordinary conjunctivitis a contraindication. Tuberculosis of the eye is a contraindication, and in most of such cases the test would be unnecessary. In this connection it is thought surprising that ophthalmologists using tuberculin in the treatment of tuberculosis of the eye did not discover the conjunctival reaction long ago. Diseases of the uveal tract, present or past, are contraindications, and it is wise to ask the patient whether he has had such trouble with his eyes. In children there has sometimes been a lighting up of a phlyctenular conjunctivitis. This disease

is almost always a scrofulous manifestation. It should be remembered that scrofulous children possess a hypersusceptibility to the poisons of the tubercle bacillus, and only weak solutions should be employed in making the test, if indeed it is used at all.

Failure to react to either test, in cases of undoubted tuberculosis, the author considers an unfavorable prognostic sign, indicating that the organism lacks the capacity of reacting with its protective forces against the poisons of the disease. Those cases in the first stage of the disease which failed to react have, in his experience, done badly. A much larger proportion of advanced progressive cases have failed to show reactions than those in the earlier stages.

The time of the appearance of the reaction, especially of the cutaneous reaction, is thought to have considerable prognostic value. A promptly appearing, severe reaction indicates a favorable prognosis. The more severe the reaction, the better are the prospects of cure. A quickly occurring mild reaction or the failure to react suggests unfavorable prognosis. A delayed mild reaction indicates a healed or latent adhesion. These principles apply also to the reactions from the subcutaneous injection of tuberculin.

Pirquet, on account of the frequency with which adults react to the cutaneous test, has considered its field of usefulness limited largely to the study of tuberculosis in children. Wolff-Eisner has found that many adults do not react, though a much larger proportion do than when the conjunctival test is employed. He considers that the cutaneous test reveals the presence of latent or healed tuberculosis, while the conjunctival test shows the presence of more or less active lesions. The great value of the cutaneous test is its aid to prognosis. The conjunctival test is a much more valuable diagnostic procedure.

Wolff-Eisner's theory of the mechanism of tuberculin reactions is substantially as follows: Individuals with tuberculous lesions have, all the time, in their blood bacteriolysins to the tubercle bacillus. All

tuberculins contain at least fragments ("splitter") of tubercle bacilli; when these come in contact with the patient's bacteriolytic, endotoxins are set free from these fragments of bacilli and cause the phenomena of the reaction. Analogous phenomena have been observed in the study of immunization to pollen in hay-fever and in Pirquet's study of the "serumkrankheit," as well as in the investigation of immunity in various infectious diseases. It is noted that the frequency with which convalescent typhoid fever patients react to the conjunctival tuberculin test may be due to the superabundant production of bacteriolytic, so abundant that they affect not only the typhoid bacillus but other bacteria as well.

It is impossible in this abstract to do more than refer to many of the interesting phases of the subject which the author has considered in detail. Among them are the confirmation of the tests by autopsy findings, the significance of reactions to repeated tests, the great question of hypersusceptibility considered in the light of recent studies regarding anaphylaxis and the serum disease, the use of the reactions in pediatrics, dermatology, ophthalmology, gynecology, psychiatry, and in veterinary medicine. The special section of more than fifty pages, in which the diagnosis of early tuberculosis is discussed from all points of view, also deserves careful reading. The author believes that it is still too early to come to a final judgment as to the precise relative value of the various tuberculin tests.

QUININE IN CHOLERA.

The *China Medical Missionary Journal* for May, 1908, calls attention to the use of quinine in cholera and recalls the fact that during the epidemic of cholera which raged on the Yang-tse some years ago the surgeon of the U. S. gunboat *Villalobos*, who was traveling on one of the infected steamers, had no other drug at his disposal, so he treated a case with large doses of quinine. At the time little attention was paid to this remedy for cholera, but since then the use of it has been brought before the attention

of the profession by Professor Koch, who recommended its use. Ussher in the Philippines, acting on Koch's suggestion, has met with decided success in the treatment of the outbreak of cholera which took place there some time ago, as many as ninety per cent of the patients recovering. The plan of treatment was as follows: Sulphate of quinine in ten-grain doses every hour until the rice-water stools had disappeared and bile was passed in the motions. For suppression of urine, friction of the limbs, hot fomentations, dry cupping over the loins, and sweet spirit of nitre were found useful. When evidence of failing circulation supervened, subcutaneous injection of saline solution proved beneficial.

THE CUTANEOUS REACTION TO TUBERCULIN IN CHILDREN.

Von Pirquet recently described a reaction characteristic of tuberculosis which is obtained on scarifying the skin and inoculating a minute quantity of tuberculin. The site of inoculation becomes red and swollen, and within twenty-four hours a small papule develops. In healthy subjects even a slight reaction is exceptional. Subsequently Calmette described a reaction obtained on instilling tuberculin into the conjunctiva which in consequence of its simplicity and trustworthiness eclipsed the cutaneous reaction, and in a remarkably short time became popular throughout the world. But later experience showed that the conjunctival reaction is sometimes followed by severe conjunctivitis and ulceration of the cornea.

At the meeting of the Société Médicale des Hôpitaux of Paris, on May 15, M. J. Comby read an important paper on the cutaneous reaction in children. He extolled this reaction and claimed for it the advantage over Calmette's reaction of complete innocuousness. He ascribed its want of popularity to the fact that its method of use (the number of scarifications of the skin, their depth, and the dose of the tuberculin) had not been laid down definitely. He has elaborated a method which has the advan-

tages of complete innocuousness, ease of execution, and certainty in diagnostic indication. He uses the one-per-cent solution of tuberculin of the Pasteur Institute, which is also used for the oculoreaction. Instead of scarifications, which are a little painful and to which patients object, he makes three pricks with the vaccine lancet in the deltoid region, telling the patient that he is going to vaccinate him. On the next day and on the day after that he observes the result. If there is no reaction only traces of the pricks can be seen—three small black spots without surrounding redness. If the reaction is positive, after twenty-four hours, perhaps a little later, there is a more or less intense redness around the pricks. This is followed by papules which last from eight to ten days. Several degrees of reaction can be distinguished: (1) slight redness, simple erythema; (2) red papules, papular erythema; (3) red papules with vesicles; (4) red papules with bullæ; and (5) red papules with central eschar and a ring of vesicles resembling anthrax, papulonecrotic erythema. The last three, and especially the last two, forms are very rare. None of the reactions are serious or produce adenopathy or fever. Complete recovery takes place in one or two weeks. This reaction is applicable at all ages and in all forms of tuberculosis.

In the immense majority of cases the cutaneous reaction, like the ocular reaction, is positive only in tuberculous children and is negative in those free from the disease. However, in cases of subacute infection (granulie) and in cases of advanced pulmonary tuberculosis the cutaneous reaction, like the ocular, may be negative. Sometimes the cutaneous reaction is negative in a patient who is very ill, but becomes positive when he improves (when the temperature falls strength is regained, and the pulmonary focus dries up). Conversely, when the reaction is positive while the child is fairly well it becomes negative when he becomes ill. The negative reaction in advanced tuberculosis is not an important drawback of the method. The important

point is to recognize tuberculosis in its initial stage when the reaction is of service. —*Lancet*, June 27, 1908.

TREATMENT OF HEMATEMESIS.

SIR DYCE DUCKWORTH in the *Clinical Journal* of June 24, 1908, has this to say in regard to the treatment of hematemesis: In cases of gastric ulcer absolute rest is to be enjoined. The alarm and unrest of the patient are to be allayed. Rest in bed on a hard mattress (with the head low and the feet kept warm), with perfect quietude, is to be secured. Such bleedings are hardly important save as confirmatory evidence of any previously entertained suspicions as to the nature of the case. Large bleedings tend to cease in most instances, and rarely prove fatal in the case of acute depressed ulcers. The patient may promptly show signs of grave anemia. Sometimes the effused blood is not ejected by the mouth, and passes by the bowel. Remember that bleeding is rarely the first recognizable symptom of a gastric ulcer.

The great point in practice here is to put nothing in the stomach for at least four or six hours. Any craving for cold drinks must be firmly resisted as tending to encourage more bleeding and vomiting. The first and best liquid to administer is whey, or more suitably, alum-whey, in half-ounce doses (prepared by adding a drachm of powdered alum to a pint of milk, nearly boiling, and straining through muslin). Later, albumen, beaten up with water and a little glucose (the eau albumineuse of the French Codex), may be given in small amounts, not too frequently. Afterward, milk with one-third of lime-water, or with the addition of liq. calcis saccharatus, B.P., ten minims to the ounce. Lactate of calcium, five grains to the ounce, may also be used. Cream and water is of service also a day or two later. The rectum may be washed out the day after the hemorrhage with a small enema, and subsequently enemata of ordinary saline solution with a little glucose may be given as a nutrient. Large injections are undesirable as tending

to produce vomiting. It is advised to apply ice to the epigastrium, but the writer is not satisfied of its efficacy. Repeated bleeding has been checked by a twenty-minim dose of turpentine, rubbed up with albumen. Ergotin in one- or two-grain doses is employed sometimes, but the writer has had no experience as to its value. Adrenalin, ten minims of one in a thousand solution, is given as a hemostatic, and the author has employed it, but he is not sure that it is quite free from objection, and is not satisfied as to its importance. As a matter of experience, with absolute rest for the patient and absolute non-interference with the stomach, he has found that these cases generally do well, and make good progress toward recovery. There is no risk in a partial starvation for a few days.

It has been alleged that hematemesis may occur without any breach of the gastric mucosa. Duckworth is very doubtful as to this, and strongly suspects that in such cases there has been an erosive lesion. These erosive patches are hardly detectable save for their bleeding during life on opening the stomach, and at a necropsy there may be absolutely no signs of them owing to digestive and post-mortem changes.

In hemorrhage dependent on cirrhosis of the liver much the same treatment is to be employed as just described—absolute rest and quietude, and nothing is to be given by the mouth. The prognosis is always grave, and repeated vomiting of blood with a fatal issue is the common experience in these cases.

In cases of gastric ulcer which prove rebellious to prolonged medical treatment, or manifest signs of adhesion of the stomach to adjacent parts, the operation of gastrojejunostomy is now proved to afford great relief and comfort to the patient. Careful feeding and a well-ordered life are necessary in all cases of gastric ulcer for many months after the lesion is believed to have healed. Unfortunately, it is often impossible to secure such management in the majority of these patients, who are seldom found amongst the well-placed classes of society. Hence we meet with relapses.

THE TREATMENT OF ECZEMA.

KESTEVEN in the *British Medical Journal* of June 27, 1908, states that eczema may be divided into two classes for purposes of treatment: (1) That from within, acting through the sympathetic chain of the functional system, may be denoted the ganglionic or idiopathic form, and (2) that arising from external or local irritation, the peripheral or traumatic.

This classification indicates the line which the treatment should follow with success. Though there is no drug or set of drugs whose action can be called specific in a complaint with manifestations so diverse as in this, there are a select few we can use with confidence to obtain the necessary control over the neural disturbance, either directly or indirectly, be the exciting cause what it may.

Thus, if a storm of gout has upset the sympathetic nerves, with the result of an eczematous eruption, the usual treatment for gout must be adopted, plus a direct nerve sedative. In this instance potassium iodide and acetanilide act well; but colchicum should be avoided, as it dilates the capillaries and tends to increase the exudation, whilst it often has a distinctly irritative effect upon the skin.

In eczema of an asthenic type, from anemia, the indication is the liberal administration of iron with such nerve tonics as strychnine and quinine, to brace up the vasomotors. If alcohol is the irritant, abstinence, with the bromides and atropine, will bring speedy alleviation, the latter because of its peculiar control over the capillaries and power of checking perspiration. It must be given in small doses, however, as increased amounts paralyze the termination of the secretory nerves and relax the capillaries. Dyspepsia, so frequently the exciting cause, calls for careful dieting, attention to the bowels, and correction of the alimentary disturbance, plus such nerve sedatives as bromides in sufficient doses to arrest the gastric nerve irritation.

The eczema that accompanies uterine troubles disappears, as a rule, with its removal, just as the eczema of pregnancy

terminates with the parturition; but a nerve sedative is essential to its immediate relief, and chloral and belladonna are the best here.

As in the above, so in all others, of whatever nature, whilst carefully devoting attention to the exciting cause, the necessary nerve sedatives must form the one chief element in the treatment.

Local applications must be resorted to in addition, and of the thousand and one which have at different times been lauded, there are two or three only which are of assured and permanent benefit. Analgesic action is the desideratum to meet the peripheral irritation. Nothing can compare, for the immediate and permanent relief which it confers, with carbolic acid if properly utilized, but as it has hitherto been applied in almost futile style, its real practical value has not been realized. In almost every treatise on the subject, while it has been highly recommended as a relief to the distressing pruritus, the strength in which it has been prescribed has rendered it useless as a curative agent. Now, carbolic acid, as demonstrated long ago by Dr. Bill, is a most powerful local anesthetic if used in sufficient strength, and the anesthesia which it produces is persistent for a longer period than any other. The burning sensation it causes at first soon passes off, leaving a painless surface. The pure (liquid) carbolic acid applied to a red inflamed eczema gives sharp but short punishment and leaves the part practically dead, and this dries rapidly, forming a scab under which the previously raw surface heals quickly; the scab on falling off leaves the surface clean and sound. This is heroic treatment, and must be applied to only limited areas at one sitting; the pain of the application can be obviated by cocaine if the subject is sensitive, and before the effect of the cocaine has passed off the part will be anesthetized by the carbolic. For small patches, such as appear on the hands, feet, scalp, and ears, it is particularly serviceable. For general use in all eczematous eruptions at every stage the 1-in-11 solution should be used, and though it certainly

smarts for a time, it gives immediate relief to the symptoms and rapidly checks and arrests the progress of the eruption.

Tincture of iodine also smarts somewhat, but gives great relief to the itching and burning, and lessens the infiltration. The two together make a happy combination—1 ounce of tincture of iodine to four ounces of the 1-in-11 carbolic solution for a lotion, to be kept applied on lint under oiled silk. In the intertrigo which so commonly occurs between the toes and extends into the tough skin of the feet, a bath of this for the feet, frequently repeated, gives wonderful relief. Starch poultice makes a good vehicle for the applications of this lotion, and is useful on tender surfaces, such as the face and neck, painted on.

Suprarenal extract is a good application previous to the carbolic, owing to its power of reducing the turgescence and exudation, thus leaving the surface fit for its action, whilst applied in the very beginning of the initial erythematous stage, it will often entirely arrest it. Adrenalin is undoubtedly the best form of this substance.

Greasy applications should only be applied in the dry desquamative stage. Used in the moist stages, they only aggravate the trouble by retaining the acrid irritating exudation. This exudation should be constantly washed away with pure cold water, which should be poured very gently over the part, and all friction avoided. Soap, whether medicated or otherwise, should be religiously avoided. Suprarenal added to the water greatly increases the relief it gives.

THE TREATMENT OF EPIDEMIC INFANTILE PARALYSIS.

ALLEN STARR, writing in the *Journal of the American Medical Association* of July 11, 1908, says that during the early stage of the disease, at the onset, cupping of the back by dry cups applied for a short time only but repeated two or three times a day may relieve the congestion that is present. Ice-bags applied to the spine may have the same effect, and sponging of the body with cool water or with water and alcohol may

keep down the fever to a certain extent. As a rule, children in this stage are in great pain and require some sedative. Acetanilide, antipyrin, or phenacetine in appropriate doses for the age may be given. It is not unwise to use Dover's powders in connection with the coal-tar preparations. The children should be kept very quiet, as their limbs are exceedingly tender. A brisk purgative should be given, and the nutriment during the first two or three days should be chiefly milk. Dr. Cushing, of Baltimore, has recently proved that the administration of urotropin results in the presence of formaldehyde in the cerebrospinal fluid, as demonstrated in his cases of cerebral surgery. This fact, which the writer states he can confirm, may be utilized in the treatment of nervous diseases where an infection is suspected, and hence the use of five grains of urotropin every four hours to a child of eight years, and smaller doses for infants, may be tried during the onset of the disease or until fever subsides. Salicylate of soda has been given also in the early stage by some observers with apparently good effect. The author prefers salicylate of strontium as less likely to irritate the stomach.

After the stage of onset is over and the pain has subsided it is wise to stop medication for two weeks and then begin the use of strychnine, which should be pushed in these cases as far as is consistent with safety. The writer has observed marked improvement under the use of one-fortieth of a grain of strychnine three times a day to a child of eight—a rather high dosage, to be reached only by progressive small increase over the initial dose. The condition of the muscles can certainly be markedly improved by manipulation, by massage, by rubbing the limbs with oil or cacao butter, or allowing the child to play daily or twice a day in a warm bath for half an hour or more, or by applications of galvanism, both constant and interrupted. It is especially important from the very beginning of the case to prevent the development of deformities, which in the majority of instances are simply due to the action of gravitation on the limb

whose ligaments are relaxed and whose muscles no longer act on the joints as ligaments. Proper position should, therefore, be insured by carefully adjusted braces when the child is out of bed, and by properly adjusted pillows and little sand-bags to hold the feet in position when the child is in bed. The numerous severe deformities which subsequently require section of the tendons, if neglected, can always be prevented by properly adjusted orthopedic apparatus, and it is never wise to delay the application of such apparatus until the deformity has been produced. The orthopedic treatment of these cases is more important than any other.

RHEUMATOID ARTHRITIS.

In the *Clinical Journal* of July 1, 1908, SYMES-THOMPSON states that rheumatoid arthritis is a disease of weakness, and the treatment must be of a tonic and supporting nature; the patients should be placed in good hygienic surroundings, and be shielded from worry. Any infective focus such as a vaginal discharge should be treated. In the acute stage rest to the affected joints must be insisted upon. The hands are to be lightly splinted, and the patient confined to a couch. Massage for the wasting muscles is beneficial. In the chronic stage we have to deal with joints more or less permanently damaged, and cure is impossible. But much may be done by means of regular massage and movement to mitigate the crippling of the joints, and by climatic and other treatment further extension of the disease may be prevented. There is a liability to relapse, and the joint movements should be remitted when such a suspicion suggests itself. Moderate exercise is to be encouraged, even with a persistently rapid pulse.

The drug which has been followed by most benefit is guaiacol carbonate. It should be given in full doses for six months, and the improvement which follows may be explained on the assumption that it inhibits the growth of certain microorganisms in the digestive tract, with

a constant diminution of the infection of the blood-stream from the intestine. Iron and arsenic may be used to combat the anemia. When the pain is severe aspirin often gives relief, and methyl salicylate may be painted on the joints. An old remedy for the pain is to surround the joints with bags containing hot sand, and remarkable results have been reported recently from Bier's method of passive congestion. This consists in tying a ligature round a limb sufficiently tightly to hinder the venous but not the arterial flow. Some edema is produced, and the application is made for from six to twenty-two hours. One application often relieves the pain for several weeks, but unfortunately the effect usually diminishes with repetition.

Patients with rheumatoid arthritis are very susceptible to cold, and it is found they do best in warm, equable climates, such as Egypt and the Canary Islands. Baths should be ordered with caution, as they tend to be depressing, though brine baths may be spoken of with less reserve. Mud baths are useful in relieving pain and stiffness, and there is nothing to be said against the trial of vapor baths locally applied to the joints.

THE VALUE OF THE OPHTHALMO-REACTION IN THE DIAGNOSIS OF TUBERCULOSIS.

In the *Australasian Medical Gazette* of May 20, 1908, GILLIES, recognizing the reserve that must always attach to a small series of cases, draws the following conclusions:

1. A positive ophthalmalmo-reaction where a one-per-cent dilution of Calmette's tuberculin is used, in the absence of secondary syphilis and possibly convalescent enteric fever, is diagnostic of the presence of an active or recently quiescent tubercular focus somewhere in the body.

2. A negative reaction does not definitely exclude tuberculosis, but is strongly against its presence, the margin of error being about 13 per cent.

3. The ophthalmalmo-reaction is as reliable as the ordinary tuberculin reaction, is readi-

ly carried out, involves little discomfort and no loss of working time to the patient.

4. The reaction is of no value unless it is certain that the eye has not been previously tested.

5. Where the original reaction has been negative it may be repeated within eight days and a positive result accepted.

6. Where doubt exists as to the correctness of the reaction confirmatory injection, if done, should be performed within eight days where the reaction has been negative, and five where positive.

THE TREATMENT OF ASTHMA AND SOME OTHER CHEST TROUBLES, WITH REFERENCE TO OUT-DOOR SLEEPING.

JACKSON in the *Australasian Medical Gazette* of May 20, 1908, says that he has always urged his asthmatics to give themselves as much fresh air as possible and to get on the veranda at nights and to disregard draughts; this with extremely good results. In common with others he has made the discovery that it is not enough to keep doors and windows open and sleep in a room; much better results are to be obtained by sleeping on the veranda; and though he has seen no reason assigned for this fact, noticed by others, he ventures to suggest that it is due in part to the fact that the veranda is more frequently and fully sunlit, so that the asthma and catarrh microbes are destroyed. We will find sometimes one member of a family constantly suffering from colds, and sometimes we will find that one occupies the only room that gets no sunlight. There is, however, another reason that applies. In hot weather there is a greater tendency to perspire when sleeping indoors. Even when doors and windows are wide open perspiration will constantly bathe an individual who can sleep out-of-doors without perspiring at all. To have one's skin constantly bathed in perspiration is not good. Perhaps this is one of the conditions when a "draught" (of air) is risky. But whatever the explanation may be of the difference between the veranda and the open bedroom, it is quite

certain that asthmatics who have resisted other treatments will very frequently yield to treatment on the veranda; often no other treatment is required.

Treatment of nasal conditions affords relief in many cases. Personally the author has tried cauterizing turbinates and septa. He has removed polypi, straightened septa, cut off spurs, and removed adenoids, etc., in asthma, and is of the opinion that benefit has resulted in consequence, and especially perhaps after straightening septa and removing spurs. In his experience he has never straightened a septum without great relief to the patient's asthma, and the same thing applies to removal of a spur. Sometimes the relief is apparently complete and permanent. The great things necessary seem to be to provide sufficient room to breathe through the nostrils and to cleanse the nasal cavities of any condition distinctly microbic, such as discharge of any kind.

The author is persuaded that oversweating is one of the causes of asthma, as well as of other chest diseases, and it is important to watch the amount of clothing that patients wear, just as much to prevent its being excessive as for the opposite reason.

MILK-FREE FLUID DIET AND RECTAL IRRIGATIONS IN TYPHOID FEVER.

In the *Medical Record* of June 20, 1908, SEIBERT advocates this plan of treatment of typhoid fever. His practical tests showed that typhoidal diarrhea stopped much more readily without than with a milk diet. Furthermore, it was noticed that the fever and the remaining symptoms of systemic infection were lowered from day to day, but only while milk was withheld. On renewing the milk diet, the temperature, the pulse-rate, the tympanites, and the diarrhea soon reached their former heights.

These observations tempted the writer to feed the next typhoid patients with strained soups and water, without milk. The results of these tests (made in the fall of 1889) were so marked that the writer came to the conclusion that milk could do but harm in typhoid fever.

Cantani had used regular irrigations of the colon with a one-per-cent tannic acid solution during an epidemic of Asiatic cholera in Naples in 1861. At Mosler's clinic (in Griefswald) this method was tried later on in typhoid fever, and Backhaut (one of the assistants) reported favorably on this plan in the *Deutsche medicinische Wochenschrift* for July, 1889. The possibility of destroying the typhoid organisms by the tannic acid was questionable, as it could not reach the small intestine, but the removal of the feces by repeated irrigations of the lower bowel appeared rational. For this purpose plain warm water could do the same work, and even better. The success of the first trials of this plan proved the correctness of the supposition, for the rectal irrigations with plain warm water have proved themselves in the hands of the writer, since the fall of 1889, to be but the rational supplement to the fluid diet without milk in every case, for both reduced the amount of typhoid poison in the patient. At first rectal tubes were used, but were soon discarded. Typhoid ulcers may be present in the rectum, even in mild cases.

Since October of 1889 the author has been enabled to test the above plan of typhoid treatment in the first medical division of St. Francis' Hospital. The following rules were followed in all cases:

1. If nausea were present on admission, the stomach was washed out. Then two doses of calomel, each containing two grains, were given within two hours.
2. Rectal irrigations with three pints of warm water were begun at once—in severe cases every three, in milder ones every six, and in mild cases every twelve hours. Bowel hemorrhage, appendicitis, and perforations were the only contraindications.
3. During the first day of treatment nothing but cold water was given.
4. From the second day on, one-half pint of strained rice, oatmeal- or barley-soup, containing the extract of half a pound of meat and the yolk of a fresh egg, well spiced, were given every three hours, five times daily. During the night cold water alone was offered.

5. During the first three days of treatment the patients were not urged to swallow all of their soup, but were persuaded to drink cold water every hour by day and by night. From the fourth day on, strained pea-, lentil-, potato-, and tomato-soup with rice were added to the menu. The desire for more food, coming in uncomplicated cases not seldom on the fifth or sixth day, was met by giving the soups thickly made. The lower the fever, and the more marked the hunger, the thicker the soup. To very hungry patients two or three zwiebacks were given with their soup at the end of the first week. Orange juice was given in water three times daily. Egg-albumen was not given, on account of the possibility of forming toxins.

6. Before each meal fifteen to twenty-five drops of hydrochloric acid were given in one-half ounce of water.

Alcohol was given only to toppers. Cold baths were never employed even in hyperpyrexia. Opium was used only in bowel hemorrhage.

During complicating pneumonia sixty to one hundred and twenty drops of 20-per-cent camphorated oil were injected hypodermically, twice daily. No other medication was used.

The results of this plan of treatment were the following:

1. Nausea, headache, delirium, insomnia, tympanites, and diarrhea ceased in most cases after two to three days, and did not recur later on.

2. In uncomplicated cases the temperature began to drop after twenty-four to forty-eight hours daily by $\frac{1}{2}^{\circ}$ to 1° F., and reached 99° F. in the rectum on the morning of the ninth, tenth, eleventh, or twelfth day of treatment, irrespective of the duration of the attack before admission. In a smaller number of cases this occurred within the first week of treatment.

3. In cases admitted with complications (like pneumonia, nephritis, and phlebitis) the intestinal symptoms (tympanites and diarrhea), as well as those of systemic infection of the nervous system (delirium, headache, and insomnia), usually disap-

peared as readily as in uncomplicated cases, while the temperature, the pulse-rate, and the respirations remained at the height characteristic of the local processes.

4. The complications disappeared more readily than under the former milk diet.

5. Later complications very seldom developed in cases admitted without complications.

CLINICAL OBSERVATIONS ON ANTI-GONOCOCCIC SERUM.

UHLE and MACKINNEY state in the *Journal of the American Medical Association* of July 11, 1908, that Parke, Davis & Co. supplied them with this serum and asked them to determine its value.

Of the twenty-three patients treated, 12 were confined in the hospital; all the others, with the exception of patient 20, were ambulant cases. All of the patients suffering with acute inflammatory complications who were treated in the hospital, and patient 20 as well, were confined to bed. Regarding the action of the serum on the urethral infection, it appears that it has little if any curative action. The improvement in the urethral condition in some patients may be attributed more to rest and hygienic treatment than to any specific action of the serum.

None of the patients suffering with gonorrheal prostatitis was cured. Of the seven cases of epididymitis, improvement was observed in three, no improvement in four. These three patients were confined to bed, with elevation of the scrotum, and it is doubtful if the improvement can be attributed to the serum alone. As is well known, many patients suffering with epididymitis are relieved of acute symptoms when confined to bed and receiving no treatment other than elevation of the scrotum.

If conclusions can be drawn from this limited number of cases, it appears that neither the number of injections nor the time elapsing between injections has any influence on the results of the treatment, as in no case was there what might be termed a prompt improvement, which is to be expected from an antitoxin treatment.

Possibly better results would have followed the administration of larger doses.

The best results were obtained in the patients suffering with arthritis. Three were promptly relieved, and all local evidences of inflammation had subsided in less than two weeks. In one of these Bier's treatment was used in conjunction. As is well known, gonorrheal arthritis is one of the most obstinate conditions to cure, and such prompt relief as was obtained is encouraging. With no other treatment excepting opsonotherapy and Bier's treatment have such gratifying results been obtained. In the case of a patient complaining of pain in the hip and back it is questionable whether the pain was gonorrheal in origin, there being no evidence of articular inflammation.

The patient with gonorrheal myositis showed but little improvement after two weeks' treatment with serum alone, but responded promptly when Bier's treatment was used in addition.

SOME OBSERVATIONS ON BLACK-WATER FEVER.

In the *Journal of the Royal Army Medical Corps* for June, 1908, SKELTON expresses his views as to this subject. The writer went out to the African coast with opinions neither orthodox nor heterodox on this matter, but since he has had several cases of blackwater under his own care, and has had the opportunity of seeing other people's cases, he frankly confesses he has come to consider the "quinine school" as the heterodox one. It seems that if one single case can be produced in which blackwater has occurred where quinine can be absolutely excluded (and these cases are well known and constantly met with), then the case for quinine as a proximate cause is considerably weakened. The converse, though, he does not hold to be so true, since the relation between any drug's action and personal idiosyncrasy is, as far as intoxication is concerned, in our present state of knowledge, too uncertain a factor to be produced in argument.

Again, from figures worked out by Plehn,

and quoted by Stephens, in connection with the incidence of the disease in quinine-takers and non-quinine-takers, he finds the following:

<i>Quinine-takers.</i>		<i>Non-quinine-takers.</i>	
Attacks of malaria....	90	Attacks of malaria.....	387
Attacks of blackwater..	6	Attacks of blackwater..	81
Deaths from blackwater	0	Deaths from blackwater.	10%

It seems an extraordinary thing that the same drug acts in the one case as a partial protective, and in the other as a proximate cause. Further, it seems only likely that if one treats an effect with a cause, except in the case of opsonic enthusiasts, the effect ought to be increased. Acting on his convictions, the author treated many cases with quinine, and with quinine in very large doses, with a view not to increase the effect, but to remove a cause by the specific action of quinine. He is quite prepared to admit that there are some people who are unable to take quinine without exhibiting the toxic effects of the drug; but these are people who, if they survive an attack of blackwater, should be invalidated home and not allowed to come out again to any place that is malarial, or where they must take quinine to keep alive or in health.

The author has noticed, too, amongst what he hopes he may be pardoned for calling the rank and file of West African medical men, a majority in favor of quinine not being the exciting cause of blackwater; but when great "authorities," such as those generally quoted, disagree, he asks: What is then the general practitioner to do? Imagine, he is away on some frontier, and his only white companion is down with blackwater, whilst the leading lights, sitting at home in professorial chairs, wrangle as to whether or not he is to give quinine to his dying patient. The situation is ridiculous and unworthy of modern medicine. An unfortunate point about the whole controversy is that so much is decided at home by "authority," and no one in the face of such authority cares for the responsibility of looking out for himself. One thus comes to the rather sad conclusion that, as far as blackwater is concerned, we know practically no more about it now than was known in 1898, when Dr. Crosse wrote his

celebrated article on it in the Transactions of the Epidemiological Society of London.

No account of the various views held by authorities as to the proximate cause of blackwater would be complete without calling attention to the results that are known to occur after infection by various species of piroplasma. It will be remembered that the piroplasmata are probably closely related to the malarial parasite. They are generally placed in the class of Hæmosporida, which includes, of course, Plasmodia, Halteridia, Hæmogregarina, and the Piroplasmata. Piroplasmosis occurs in all sorts of animals, and the leading symptom in all its forms is hemoglobinuria. In dogs it is popularly called malignant jaundice. At the time of writing it is not generally agreed upon that there is a *Piroplasma hominis*, doubt having been thrown upon the piroplasmic origin of the spotted fever of the Rocky Mountains.

It may also be noted that certain forms of piroplasmata under the microscope look almost exactly like the parasites of malignant tertian fever. The tick is the intermediate host of the piroplasma. But the tick does not infect any other animal directly; an infected tick gives rise to an infected progeny, so it is the next generation that is infective.

Before finishing with the etiology of blackwater, the author gives his own personal views on the subject. He states, in his own mind, he sees two conditions: (1) Hemoglobinuric paludism, which is what he personally means when he speaks of blackwater fever; (2) a quinine intoxication, supervening in many cases of paludism, which is what he personally does not understand by blackwater fever; and he is quite prepared to find that what he means by blackwater fever will one day be found to be a disease *sui generis*, and a disease to which only paludics are susceptible.

The exciting cause of blackwater is not merely a subject for academic discussion, but is a very vital point, as it must necessarily affect the treatment.

The lines upon which one may act are: (1) Antimalarial—that is, according as one

believes it to be a paludic hemoglobinuria, or *vice versa*; or (2) simply systematic, making no attempt at striking at any specific cause. This practically means a masterly inactivity. The first of course will be combined with the second as far as relieving distressing symptoms goes.

In a series of twenty cases, eight have been treated with cassia bereana—*i.e.*, practically under (2); ten have been treated with atoxyl by injection. Under systematic treatment there has been one death. Under atoxyl there was also one death. The author states he has never lost a case that has been treated by quinine. This gives a total mortality of 10 per cent.

Under (1) the line he takes up is as follows: He gives a simple soap-and-water enema and gets the rectum well washed out. He then slowly siphons into the rectum the following: quinine sulphate 50 grains, acid hydrochloride dilute q. s. to get it in solution, warm water 3 ounces. A small medicinal enema like this he has found is always well retained. He has always wanted to find out how much of this is really absorbed, but the technique for its estimation is elaborate and beyond his resources. At the most he does not expect more than one-half is absorbed, if as much. He gives quinine by the rectum, as he is convinced that it is the most comfortable way. If the hypodermic method is used, say, under the skin of the arm, more often than not the arm remains painful for some days, no matter what aseptic precautions be used. Very much the same happens if quinine be injected into the muscles of the buttock. He has used this method frequently for treatment of ordinary malaria, but after having seen many cases suffer very severe pain at the site of injection he has discarded it. He repeats the quinine after twenty-four hours. Thus he considers he has, at any rate, removed the cause, and any stray parasite that may have escaped the first administration falls a victim to the second.

The most distressing symptom, as he has already mentioned, is vomiting. This must be relieved as soon as possible. In the milder cases an effervescent mixture may

relieve it, but this is useless in the more severe cases. For some years past at the Military Hospital at Tower Hill, Sierra Leone, a trial has been made of the liquid extract of cassia bereana, a root that has acquired some notoriety in Zanzibar. It is claimed that this drug has some specific action as well. He has never seen it do any good, and the best that can be said of it is that it has never been known to do any harm. He had two West Indian negroes with blackwater both admitted to hospital the same day. Both had a high temperature, about 104° F., and both were passing black urine in fair quantities. He gave the one quinine enemata, and the other 40 minims of liquid extract of cassia bereana, every two hours. The quininized patient's temperature dropped to normal in twelve hours and did not rise again, and the following evening his urine was clear. The temperature of the other man came down by lysis, but his urine did not quite clear up for four days. The author was greatly struck at the time by the contrast afforded by these two cases. The drug he relies on to stop the vomiting is morphine; he injects $\frac{1}{3}$ grain and repeats it after six hours. He also applies hot fomentations to the stomach area. It has failed him only once, the case being Corporal F., who vomited almost incessantly for twenty-four hours. He neglects the fact that there may be an accompanying nephritis in blackwater cases. The vomiting has to be stopped, and morphine is the only drug that he knows of that will do it quickly. He has seen no ill effects from the use of this drug. As soon as it seems likely that the patient can retain anything in his stomach, he returns to quinine, which he gives in 5-grain doses every morning, accompanied with a tonic of iron and arsenic.

Those who do not believe in the efficacy of quinine, or rather those who believe it to be a positive danger, most usually fall back on the so-called "Sternberg treatment," as used for yellow fever. This consists in the administration of 10 grains of bicarbonate of soda and 30 minims of liquid perchloride of mercury, to be taken every

two hours, ice-cold. The principle of the treatment in yellow fever is to "combat the acid diathesis."

Captain F. Harvey, R.A.M.C., has demonstrated that between soldiers in normal health and patients suffering from malaria there is no difference in the alkalinity of the blood. The same held good for a small series of blackwater cases that came under his notice. He then fed healthy natives on large quantities of carbonate of soda. It made not the slightest difference to their blood alkalinity. The theory of any acid diathesis in blackwater appears to be founded upon a coincidence of symptoms rather than upon scientific fact.

Treatment of Complications.—As long as the patient is secreting urine in fair quantity—that is, at least 40 ounces per diem—the writer considers he is progressing as well as may be expected, but when the quantity is diminishing, even if the temperature is falling, matters are not going so well. This double fall is a kind of danger-signal. There is, presumably, a gradual mechanical blockage of the glomeruli in progress, and suppression is the next step. Two cases of practical total suppression yielded to a combination of a hot-air bath, 1 minim of croton oil, and the infusion of 4 pints of saline solution. In one case, by the time the author had got the infusion apparatus ready, the patient was comatose and he had abandoned all hope of saving him. He rallied slightly after the infusion, and an hour afterward had a most violent rigor; this was followed by profuse sweating, and he eventually passed 16 ounces of urine in the next twelve hours. An injection of pilocarpine is also an invaluable aid to the hot-air bath, etc.

Relapses are fairly common, and usually are a very serious complication. The mortality is generally high. Kohlstock, in the Kamerun, using no quinine, had no death in eight cases. F. Plehn had one death out of 25 cases (4 per cent), and A. Plehn lost five out of 58 (9.8 per cent). These, apparently, were cases treated in hospital, for out of 53 treated outside 15 died (43 per cent). The general average is stated to be

about 20 per cent. Dr. Steuber, in his observations on the employment of European troops in the tropics, puts the mortality from blackwater after cholera and before enteric. A. Broden, writing from Leopoldville, mentioned the case of a doctor who gave injections of quinine (grammes 1.50 to 1.80 a day), and lost seven cases out of 12 (58 per cent). Some other mortality statistics are Steudel (German East Africa), 16 to 17 per cent; Reynolds (Gold Coast), 50 per cent; Beranger-Feraud (Senegal), 23 to 24 per cent; Koch (German East Africa), 21 per cent; and Schellong (Malay Archipelago), 42 per cent.

FIBROLYSIN IN THE TREATMENT OF CONTRACTED SCARS.

In 1892 Hebra introduced a substance which he called thiosinamine for the treatment of lupus. This substance is chemically allyl-sulpho-urea. It was found that it exercised a peculiar action on scar tissue in causing it to swell, stretch, and become soft. It soon became evident that the injection of such a drug would be of use in the treatment of contracted scars. Cognat introduced a combination of thiosinamine and ethyl iodide under the name of thiodine. This preparation possessed disadvantages in having a disagreeable smell and in being little stable. The objections raised against thiosinamine were that it is but little soluble in water; that injections are painful when it is dissolved in alcohol; and that it is inactive when taken internally.

A new preparation has more or less recently been introduced under the name of fibrolysin, which is a chemical combination of thiosinamine and sodium salicylate. It is freely soluble in hot or cold water, but the solution undergoes oxidation when kept in the presence of air and light. It has therefore been put up in sealed vials, in which the solution seems to be indefinitely stable. Each vial contains 2.3 cubic centimeters of a solution of 1.5 grammes of fibrolysin in 8.5 grammes of water. Each thus corresponds to 0.2 gramme of thiosinamine.

F. Mendel (*Berl. Klinik*, October, 1907)

deals at some length with the theoretical and practical aspect of this preparation. He shows that fibrolysin is non-toxic in therapeutic doses. After intravenous injection the substance is split up into its constituents and a garlic-like odor is noted in the expired air. Intramuscular injection is to be preferred to subcutaneous injection and at times even to intravenous injection. It is painless, is active, and easy to carry out. The allyl odor is noticeable after the injections, but since this is but of short duration and is an indication of the rapid splitting up of the compound, it must be regarded as a sign of the activity of the preparation. After discussing the selective action on scar tissue which has been determined by careful microscopical observation, he turns to the method of application and the dosage. Intravenous application must be carried out with scrupulous aseptic precautions. The corpuscles are not damaged in the least degree by the drug. The fluid should never be injected before a column of blood has entered the syringe, when the piston is withdrawn, so that one is certain that the needle is inside the lumen of the vein. For adults 0.2 gramme of thiosinamine—that is, 2.3 cubic centimeters of fibrolysin—is injected as a dose. Children require less, but seldom less than half this dose. The injections should be repeated every one, two, or three days, according to the severity of the case. The maximum number of injections which the author has employed was 50. Individual susceptibility toward the drug is met with at times. The symptoms produced in these cases are headache, sleepiness, and feeling of malaise. Fever also has been met with. He speaks of the results which he obtained with fibrolysin, and states that they are satisfactory provided one does not expect the scars to stretch unless active dilatation can be applied—for example, it will be useless in pyloric stenosis unless the muscular wall is still in good condition.

Becker also praises the action of fibrolysin (*Deut. med. Woch.*, Oct. 24, 1907). He obtained excellent results in Dupuytren's contraction and in the after-treatment of injuries. Stiff joints only respond to the

treatment to a certain extent, and the complete mobilization of the joint must not be expected if inflammatory conditions have taken place.

H. Lang (*Deut. med. Woch.*, Nov. 28, 1907) speaks of the good results which he has obtained in urethral stricture with fibrolysin. He reports on two cases which he has been able to follow closely. In one case a traumatic stricture of fifty-three years' standing was softened and dilated by its means, and in both cases no tendency to recontract has yet shown itself. The cures had lasted for seventeen weeks in the first case and fourteen weeks in the second, so that, although he does not wish to speak of permanent cures, it looks as if the strictures will not return, at all events rapidly.—*British Medical Journal*, June 6, 1908.

AN ANALYTICAL STUDY OF SIX HUNDRED CASES OF ANESTHESIA.

In the *New York Medical Journal* of June 13, 1908, HAROLD L. SPRINGER after an analysis of many cases of anesthesia reaches the following conclusions: He urges that the importance of this subject be given more recognition by medical colleges, and that each student receive more individual instruction and experience. Furthermore, he urges that in hospitals the anesthetist be the most experienced man on the interne staff instead of the least experienced. He believes that ether and chloroform are apparently the most satisfactory anesthetics, and that ether is safer than chloroform, but under certain circumstances, when chloroform is desired, the risk may be materially lessened by giving oxygen with it.

The average patient in his experience was ten minutes becoming anesthetized, and it required two and one-half ounces of ether to obtain this condition.

The average length of time of the operation was one hour and a quarter, and it required five and one-half ounces for this time, or, in other words, about six ounces was used during the first hour, and about three ounces for the second hour.

While most of the evidence at hand points in favor of vomiting being due to a centric

disturbance in ether anesthesia, his records show a close relationship between excessive secretion of mucus and vomiting.

In the treatment of accidents most dependence may be placed upon ammonia in the form of inhalation, and oxygen. •

The more remote consequences of anesthesia, such as status lymphaticus, acetoneuria, acidosis, hepatic toxemia, etc., must not be lost sight of, and general anesthesia should be preceded by a thorough examination of the heart, lungs, and kidneys.

CAMPHORIC ACID: ITS ACTION AND USES.

TYRODE recalls the fact in the *Boston Medical and Surgical Journal* of June 11, 1908, that with the knowledge that camphor possesses a marked pharmacological action—i.e., a powerful stimulant effect on the respiratory and vasomotor centers and on the heart itself—considerable interest has been shown in some of its derivatives. One of the best known is the oxidation product, camphoric acid. For many years the latter has been considered to possess an action analogous to camphor on respiration and circulation; but besides, it was reputed as an excellent remedy against pathological sweats, as those occurring in pulmonary tuberculosis.

Various theories were entertained concerning the antihydrotic action, but strangely enough practically no serious experimental work was performed to settle the question. Most authorities assumed that it paralyzed the sweat glands like atropine, but Kobert, the eminent pharmacologist, devised the ingenious theory that its action was due to a stimulant effect on the medulla, that excessive sweating in phthisis was the result of improper aeration of the blood, and as camphoric acid increases the function of the respiratory center, it overcame the partial asphyxia.

Until last year the only work upon the influence of this acid upon respiration was done by Wagener in 1886. It consisted of only one experiment, from which the conclusions were erroneous.

Fujitani performed a research on cam-

phoric acid in 1906, and also came to the conclusion that it stimulates respiration. When examining his protocol it is easy to see that he misinterpreted his own experiments. He used the Marey tambour and drew his conclusions from the rise in the respiratory curve, which he obtained for a few seconds during and after the injections of the drug, in spite of the fact that within a minute or so the respiration fell as low or even lower than normal. His transient rise was obviously the result of reflex stimulation.

The writer's work on respiration was performed with a gasometer connected with the trachea, and the actual amount of air respired in a given space of time was measured. From these experiments he was unable to observe any constant, significant rise in the respiratory capacity, even with the use of enormous doses. In fact, as much as eight grammes failed to produce an effect in several rabbits.

The work on the circulation and isolated heart was also negative. Warm-blooded animals failed to show any symptoms, and did not die after very large doses given both subcutaneously and intravenously in the form of the sodium salt of camphoric acid. Administered internally in large amounts this acid causes death from gastroenteritis, and if unneutralized in herbivora, it produces acid intoxication.

In experiments where the flow of urine was observed, the latter was found increased as after any neutral salts injected intravenously.

When administered in the dose of one gramme per day, rabbits weighing about two pounds showed no changes in their metabolism for periods of months.

The action on the sweat glands was studied on the paws of young cats with completely negative results.

No action was seen on frogs unless these animals received from 1-20 to 1-10 of their body weight of the drug, and death occurred from general paralysis, as would happen after most neutral salts in such concentration, from the changes in the osmotic tension of the tissues.

Upon inquiry, the writer found that camphoric acid had been used by several of his colleagues in the clinics for the night sweats of consumption without beneficial results. He invited some of them to test the substance again, but the results were, as a rule, unfavorable.

Since it had been employed abroad as a urinary antiseptic, he requested a specialist of genito-urinary diseases to try its efficacy. The latter obtained good results in a number of cases of cystitis with an acid urine, but no amelioration in those with an alkaline secretion.

After having performed over one hundred experiments upon animals, the author is forced to the conclusion that camphoric acid as such acts in the same order as the other organic acids, which are not decomposed in the body; that in combination as a sodium salt, which is formed in the intestines, it acts like any neutral salt, such as sodium sulphate—*i.e.*, its ions have so little activity that it possesses only the action derived from its physical properties, "salt action." He further sees no justification in its use as a respiratory and heart stimulant, nor as an antihydrotic in the tubercular night sweats. Yet it may be of some utility as a urinary antiseptic, because it may have, in common with many other free organic acids, slight antiseptic power.

THE TREATMENT OF SCABIES BY BALSAM OF PERU.

Aviss writing in the *Journal of the Royal Army Medical Corps* for June, 1908, reminds his readers that the use of balsam of Peru in the treatment of scabies is frequently urged in its columns. It certainly cures the scabies, but in many cases the results of the application are much worse, for the patient, than itch. The author has recently had under his observation three cases, not without interest.

One, after one application of the balsam, developed an intense erythema, followed by desquamation, albuminuria (no blood), and general edema. It was not a case of scarlet fever, and is still in hospital. The other two cases developed an acute eczema with

much pustular exudation affecting the whole body, likewise after only one application of the balsam. They each spent about six weeks in hospital while their eczema was getting well. In view of these facts the author has returned to the old and cheap soft soap, scrubbing brush, and sulphur ointment treatment, which is, to his mind, just as efficacious as the balsam method.

Eczema, which costs 2 shillings to produce, and leads to six weeks in hospital, is to be avoided if possible. The writer agrees that the balsam is good for early ringworm. For old cases he has not found it any better than the ordinary methods of treatment.

PRURITUS ANI.

In the course of an article in the *New York Medical Journal* of June 13, 1908, MASON remarks that certain errors of digestion as well as certain articles of food may start an attack of pruritus. In the opinion of the author coffee is more harmful than any other article of diet, and will alone produce the disease in certain persons. All of these things should be searched for, and if found, given careful attention. The author refuses to treat a person who maintains the habit of drinking any form of alcohol.

As a rule, the treatment must be long and tedious, and unless the patient will make every effort to assist in bringing about a cure he refuses to treat him.

There are many formulæ that are used with more or less success, a few of which are here given. Tuttle speaks highly of the following:

℞ Ac. carbolic, 3ij;
Ac. salicylici, 3j;
Glycerini, 3j.

M. Sig.: Apply with camel's-hair brush after bathing with hot water.

Mathews recommends:

℞ Camphor and phenol, 3j;
Glycerin, 3j.

M. Sig.: Apply after using hot water, and repeat frequently, if necessary.

In cases in which there are fissure-like cracks at the junction of the skin and mu-

cous membrane, Cripps recommends the following:

℞ Ext. conii, 3j;
Ol. ricini, 3j;
Lanolini, 3j.

M. Sig.: Apply frequently.

An ointment of chloroform as follows acts nicely in many cases:

℞ Chloroformi, 3j;
Petrolati, 3j.

M. Sig.: Apply frequently.

This must be put up in a wide-topped bottle and kept tightly corked, as otherwise the chloroform will soon evaporate.

Where the parts are too moist the treatment is often assisted by the use of powders that will absorb the moisture. Plain starch has given good results in many cases. Dry calomel many times is very useful. The following has given good results:

℞ Camphor, 3ij;
Carbolic acid, gtt. 15;
Precipitated chalk, 3ij;
Zinc oxide, pulv., 3ij;
Perfume, q. s.

M. Reduce the camphor with alcohol and mix the others through bolting cloth of one hundred meshes to the inch.

The author has operated under chloroform three times by removing a section of the skin for about an inch on each side of the anus, and then undermining the surrounding skin and drawing it together to cover the denuded surface and stitched it to the mucous membrane of the bowel.

In two cases he secured good results, while the third patient was lost sight of. This procedure was suggested to him by Dr. Hamilton, and as a means of last resort he believes it to be very valuable. He intends to make further use of it as opportunity arises.

Patients should always be told not to scratch the parts, although this warning is seldom heeded. If the itching is so severe as to interfere with sleep, have them use hot water, gradually increasing the temperature, until it is nearly scalding. In case this is not sufficient to give relief, an ointment of chloroform, one drachm to one ounce of petrolatum, may be applied. A

weak solution of carbolic acid in water and glycerin will often give relief when all else fails. The following mixture is a most excellent one:

R Sodium hyposulphite, 3j;
Carbolic acid, 3ss;
Glycerin, 3j;
Distilled water, 3iij.

M. Sig.: Apply frequently on compresses.

Also:

R Cocaine, gr. ijss;
Ext. rhatany, gr. xv;
Ext. hamamelis, gr. vij;
Petrolatum, 3v.

M. Sig.: Apply freely.

Dr. Buckley recommends the following, and the author can testify to its merits:

R Ungt. picis, 3iij;
Ungt. belladonnæ, 3ij;
Tr. aconit. rad., 3ss;
Zinci oxidi, 3j;
Ungt. aquæ rosæ, 3iij.

M. Sig.: Apply freely.

The writer has cured several patients by injecting cocaine under a small portion of the skin where it is thickened and then cauterizing it with the actual cautery. After healing has taken place, another area is treated in the same way. This makes the parts quite sore, but not more than is bearable, and most patients are willing to put up with it if it is likely to cure them.

While the principal attention should be paid to the skin in order to get relief from the itching, yet measures should be taken to cure the catarrh in the bowel above by having the patient wash out the bowel with solutions of boracic acid and then injecting a 25-per-cent mixture of glycerite of hydrastis (not fluid extract). Other antiseptic astringent solutions may be used, such as would be beneficial in catarrhal conditions in other parts of the body.

Owing to the difficulty experienced in effecting a cure in some of the chronic cases that have come to him for treatment, and being anxious to try anything that held out any hope of cure, the author was led to try the Roentgen rays. While his experience has not been great in the number of patients treated, it has been so satisfactory

that not only himself but his patients have been delighted with the result.

This method is only useful in old chronic cases where the skin is eczematous and thickened. Just what the action is that brings about a cure he does not attempt to say, but that the eczema disappears and the skin returns to its normal condition, or nearly so, is beyond question. It is too soon to say positively how permanent the results are going to be, but from the appearance of the skin the writer thinks there will be no return if the bowel above is put in a healthy condition.

His technique is as follows: With a soft tube he gives an exposure of ten minutes' duration twice a week, until he learns how the skin is going to stand it. If there is no irritation he gives three treatments a week until a brown discoloration appears. All treatment is then stopped until this goes away, when treatment is resumed until it reappears. This is usually enough, but if possible he thinks it is well to give an occasional treatment after this as a matter of precaution.

THE PROPHYLAXIS OF SURGICAL INFECTIONS BY IMMUNIZATION.

LERDA (*Archiv für klinische Chirurgie*, Band 85, Heft 2) says, as a result of a review of the literature, together with his observations in immunization upon guinea-pigs and rabbits, that it is possible to produce in a short time in guinea-pigs and rabbits by vaccination with mixed sterilized cultures of staphylococci and streptococci, or better, by their endotoxins, an observable grade of immunity against these germs. The immunity is of a polyvalent character. This is confirmed by most investigators. The vaccination does not produce in man such great disturbance as is produced in vaccination against pest, cholera, and typhoid fever, and there is no evidence that the influence is not as great. Vaccination is a useful supplement to modern aseptic procedure. The time required for producing an active immunity is so long (eight to twelve days) that its influence cannot be waited for in the abortive treatment of trau-

matic sepsis. In the face of the impossibility of carrying out an absolute asepsis and the fact that the resistance of the organism is not always sufficient to combat infection, it is important that surgeons should acquaint themselves with the theory and practice of immunization against the most frequent infections.

THE TREATMENT OF ECZEMA OF INFANTS AND YOUNG CHILDREN BY THYROID.

EASON (*Scottish Medical and Surgical Journal*, May, 1908) briefly reports a series of consecutive cases of eczema in young children successfully treated by thyroid. In the first case, fourteen months old, the baby had suffered from eczema of the face for nearly a year. This had been entirely resistant to the usual applications and internal treatment, nor was hospital treatment more efficacious. Two and a half grains of a thyroid tablet was given daily. In a little more than one month the child was entirely well. His cure persisted for nearly a month, when the disease showed a tendency to recur. The second course of thyroid was followed by a permanent cure. The four other cases gave similar results.

INTESTINAL ANASTOMOSIS WITHOUT OPEN INCISION BY MEANS OF BASTING STITCHES.

PARKER and KERR (*Johns Hopkins Hospital Bulletin*, No. 206, 1908) describe what they regard as an easy and rapid method of suturing applicable to every form of intestinal anastomosis, whereby the immediate formation of a patent stoma may be accomplished without operative opening of the intestinal lumen and without the introduction into it of any instrument or ligature.

The procedure is an extremely simple one. It consists essentially in the use of a Cushing continuous stitch, without knots, to temporarily close the intestinal incision, a separate stitch being used for each of the two visceral openings that are to be sewn together. These stitches remain in place only while the permanent sutures are being applied. On account of their method of ap-

plication and the temporary purpose which they serve, they bear a certain likeness to the "basting" stitches of the seamstress, and for convenience they have called them by that name.

The steps of the operation and the advantages which they believe it to possess may be briefly summarized as follows:

Division of the intestinal walls is made between two narrow-bladed crushing clamps, placed first in actual contact and then slightly separated so that there is left between them a narrow, crushed area, consisting practically only of serosa and fibrous coat, which may be divided by the knife or cautery.

The basting stitch is a Cushing continuous stitch without knots, placed upon the clamped incision with the loops between the stitches crossing over the blades of the clamp. When the clamp is removed and the stitch at the same time drawn tight, the edges of the incision are automatically inverted and held firmly pressed together in a straight line without any separation of the opening having occurred. The two incisions, so prepared, are then placed side by side, and are stitched together around the whole circumference of the intestinal tube or of the new operative opening that is to be established. When the last suture has been placed and tied, the basting stitches are cut short and withdrawn, the intestinal canal, or the new anastomotic stoma, then instantly becoming patent. This completes the operation as far as the suture of the intestines is concerned. The lumen has not been opened, and it has not been entered by any instrument or other object. The stoma becomes open only with the withdrawal of the basting threads. The steps of the operation are essentially the same whether circular, lateral, or end-to-end anastomosis is done.

The operation so performed calls for no time-consuming maneuvers and no more than ordinary manipulative skill. The basting stitches are as easily and as quickly placed as the purse-string suture used to turn in the stump of the appendix or grasp the Murphy button. Upon removal of the:

clamp the stitch is at once drawn tight by a single motion, and the incision, securely closed in a straight line, is then ready for suturing without further attention. The turning of the cut edges which takes place is automatic and never requires the use of an instrument to assist it as in the case of the purse-string suture.

With the two basting stitches in place, intestinal suture, at any rate in dogs, becomes singularly free from its usual difficulties. Only a single assistant is ever needed, and even he may be readily dispensed with. The parts to be joined are held in the most convenient position and under perfect control, so that the stitching is done with surprising rapidity and ease.

The troublesome eversion of the mucosa and the vermicular contractions of the muscular coats no longer exist. Approximation of serous surfaces to any desired extent and at a uniform distance from the margins of the incision is assured. The inversion of the cut edges presents a folded wall through which to pass the stitches, making precision in their application, with secure anchorage in the fibrous coat, particularly easy.

Handling of the intestines is reduced to a minimum. The hands of the operator need scarcely touch them, and those of the assistant not at all.

In end-to-end suturing the small triangular peritoneal defect at the mesenteric border is automatically obliterated by the basting stitch, insuring apposition of serous surfaces at this point.

A striking advantage of the method is seen when the two incisions to be joined happen to be of unequal length. In this case the longer one is simply puckered or "gathered" in upon its basting thread until it corresponds in length with the shorter incision, and the sutures are then applied. The authors have successfully united in this way without the slightest difficulty intestinal incisions, one of which was double the length of the other.

In the beginning of the experimental tests of this method a single discouragement was met with. This occurred in the first three operations upon dogs, done on three consec-

utive days, the animals dying of obstruction, due to turning in too much of the intestinal wall. This is the one fault to which the method may easily lend itself if the operation is carelessly done, but one which it is equally easy to avoid. It is practically only in dogs of small size, or in young children, with intestines having a very small lumen and relatively thick walls, that this danger applies. Subsequent success even with dogs of the same size demonstrated that these initial failures were not due to a fault inherent in the method.

For a more detailed description of some of the steps of the operation which is necessary it will be sufficient to take the classical example of end-to-end suture after resection.

At each point where division of the intestines is to be made two parallel clamps grasp the flattened tube transversely or at an angle from the free border to the mesenteric border. The method of dividing the intestinal walls between these clamps has already been described. Circumvection ligation of the mesenteric vessels, going to the portion to be resected, and removal of that portion, follow. There remain then the two intestinal ends that are to be joined, each closed by a strong clamp. The intestinal walls have been divided flush with the blades of the clamp, so that no tissue whatever projects.

The next step is the application of the basting stitches. Holding the clamp in his left hand the operator enters the first bite of the stitch on the side of the flattened intestinal tube facing him, close to the mesenteric border, at the point where the peritoneum begins to be reflected away from the bowel wall. This first bite of the stitch is taken parallel with the axis of the intestines and in a direction toward the clamp, emerging about one millimeter from its edge. Now turning over the clamp the thread passes over its blades, and the second bite of the stitch is taken in the opposite side close to the mesenteric border as before, but this time parallel with the blades of the clamp and about one millimeter from its edge. These first two stitches are most important,

since by them the mesenteric angle is turned in obliterating the peritoneal defect at this part of the incision. The third, fourth, and following stitches are exactly like the second and are taken alternately, first in one side and then in the opposite side, until the free border is reached. The last bite of the stitch, taken in the free border, is again like the first bite, parallel with the axis of the intestine, but this time taken in a direction away from the clamp, entering about 1 millimeter from its edge. Thus the first and last stitches in the mesenteric and free border respectively are parallel with the axis of the intestine. All the intervening stitches are parallel with the blades of the clamp and as close as possible to its edges. All the loops of the stitch pass loosely over the blades of the clamp.

It will be seen that this is simply a Cushing right-angled continuous stitch, since all the individual stitches on one side of the incision correspond with intervals between stitches on the opposite side, exactly as in the Cushing stitch.

Both ends of the basting threads are left eight or ten inches long. No knots are tied. Medium heavy white silk is used for the basting threads to distinguish them from the black silk used for sutures. A straight or curved intestinal needle may be used as preferred.

The clamp is now loosened and carefully drawn from under the loops of the stitch. The thread is grasped, one end in each hand, and by separating the hands strongly is made taut, the effect being to produce instant and automatic inversion of the edges and secure closure of the incision in a straight line. Both mesenteric and free borders are inverted as well as the lateral walls.

When the crushing clamp grasps the intestinal tube it pushes aside the mucous membrane on the inside and the two muscular coats on the outside, leaving practically only fibrous coat and serosa between its blades. When the clamp is removed there is seen a narrow ridge of crushed tissue consisting of these coats of the two intestinal walls glued together by the pressure

to which they have been subjected. Even in the dog's intestine, with its thick muscular coats, the lips of the incision do not separate during the few seconds intervening between the removal of the clamp and the pulling taut of the basting stitch. Unless this is purposely delayed, allowing time for the vermicular action of the muscular coats to pull apart the edges, the mucous membrane is never seen.

The other end of the divided intestine having been prepared in the same way, the next step is the uniting of these two ends by sutures. The assistant grasps the long free ends of the two basting threads, those from the mesenteric borders in one hand and those from the free borders in the other, and holds the two threads taut and parallel with each other, adjusting them so that the two intestinal ends, hanging from the middle of the threads between his hands, unite mesenteric border with mesenteric border, and free border with free border. It will be seen that when the two ends of the flattened tube are so held there are four intestinal walls lying in contact with parallel edges. A detailed description of the application of the sutures is unnecessary. Almost any form of a stitch may be used. Turning the corners presents no difficulties. Two precautions are essential—not to cross the line of the basting thread with any of the stitches, and not to catch the basting thread itself with a stitch. When the permanent stitching is finished and the basting threads have been cut short and withdrawn, the intestinal tube is rolled between the fingers at the suture line to make sure that the lumen is patent.

The writers do not recommend any particular form of suture to be used exclusively in this method. They feel sure, however, that the general preference for a continuous stitch in circular suture of the intestine is well founded. The tension to which intestinal stitches are subjected under ordinary conditions comes wholly from internal pressure in the intestinal tube. In hydrostatics the law which applies to such a case is that in a thin-walled tube subjected to internal pressure the circumferential strain upon the

walls of the tube is double the longitudinal strain. As applied to circular suture of the intestines, this means that the longitudinal strain which tends to pull the edges of the incision apart equals only half of the circumferential strain which tends to tighten the stitch if a continuous suture has been used.

Hemorrhage in intestinal operation is not likely to give trouble with this method, but it would be unsafe to conclude that it might not do so in operations upon the human stomach, and therefore the method is far from having been sufficiently tested to be recommended for that work.

The assistant may be altogether dispensed with. The operator in that case passes the long basting threads over the thumb and index-finger of his left hand with the two intestinal ends hanging between them, the ends of the threads being twisted around the little finger to hold them taut.

It is possible to put in the basting stitches before instead of after the incisions have been made, but the method does not seem to have any advantages over the one described.

An attempt to show how quickly any procedure may be carried out in an experimental operation seems unprofitable and misleading, therefore the authors have not tried to make a record. Working deliberately and doing every step with painstaking care, they found, comparing a number of trials, that the application of the two basting stitches, removal of the clamps, and drawing taut of the threads require about four minutes. A single continuous stitch around the circumference of the stoma takes about four or five more, so that the time required for the intestinal suture proper may be placed at about ten minutes. This leaves out of account the time required in the resection, and in opening and closing the abdomen.

In the following fifteen observations, dogs ranging in weight from 13 to 30 pounds were used. They were all thoroughly anesthetized with ether. The after-treatment consisted of fluid diet after twenty-four

hours, and chopped meat after two or three days.

The specimens were examined from three to one hundred days after operation, and a fair idea of the process following the suture could be obtained. In no case was there any leakage. In the first three cases a solid septum had formed from the careless turning in of too much tissue. This was never encountered again. In experimenting by this method with calves' intestine or dead human intestine, where the lumen is large and the walls proportionately thin, the turned-in edge was not more than one-eighth of an inch wide and offered no stricture or possibility of obstruction. In one case examined three days after operation the turned-in edges had atrophied to a fine fringe of tissue one-sixteenth of an inch wide. In two others, in which a transverse end-to-end anastomosis had been made, some stricture with dilatation and hypertrophy was found. This was first noted by Edmonds and Ballance in 1896 and advanced as an objection to end-to-end anastomosis. In the subsequent cases this was entirely done away with by using the oblique incision. Stricture, hypertrophy, or dilatation has never been found following this procedure.

HEMORRHAGE FROM THE STOMACH AND DUODENUM.

W. J. MAYO (*Surgery, Gynecology, and Obstetrics*, May, 1908) notes that a single hemorrhage from a patient who has not had previous gastric symptoms is probably not due to ulcer, and holds that bleeding from the stomach is neither a sure sign of ulceration, nor is its absence a contraindicating one. Indeed, he holds that hemorrhage from ulcer is by no means of frequent occurrence. Copious hemorrhage at infrequent intervals is the history of a considerable percentage of ulcers, whilst continuous small hemorrhages are the rule in cancer; 96 per cent of gastric and duodenal hemorrhages cease spontaneously. Fatal hemorrhages usually incident to involvement of the splenic vessels produce death so quickly that an operation cannot be performed.

Bleeding ulcers divide into three groups: First, the acute round peptic ulcer, which Mayo states in his observation was not round but rather a small fissure, the detection of which was difficult. The second variety is a mucous erosion. These two forms are both probably toxic in their origin, are both rare, and are usually medical affections. The third variety—*i.e.*, the chronic ulcer—constitutes a surgical affection, though not necessarily operative during the acute stage. Mayo states that more than 90 per cent of acute hemorrhages from the stomach are from chronic ulcers with a well-marked ulcer history. In the greater number the condition would have warranted operation independent of the hemorrhage. When there is hemorrhage from the stomach without previous history of ulcer, the burden of proof must show why an operation should be performed; while in hemorrhage from chronic ulcer the burden of proof must show why an operation should not be performed.

In case of small hemorrhages gastrojejunostomy is an efficient curative agent. When the ulcer is some distance above the pylorus, permitting of ready egress of stomach contents by the normal outlet, gastrojejunostomy is of less value. In connection with gastrojejunostomy, if the ulcer exists in the stomach it should be excised if possible. Where this is not feasible the main blood-vessels leading into it should be ligated and the peritoneum and muscular coats drawn over it. Bleeding ulcers which lie a considerable distance above the pylorus should be excised. Should the deformity incident to the removal of the ulcer and its plastic closure materially interfere with drainage from the pylorus, gastrojejunostomy is indicated in addition to excising. In hemorrhage from duodenal ulcer, ligation of the blood-vessels and closure of the outer coats over the indurated area, with gastrojejunostomy, will be found efficient.

In the majority of ulcers, both of the stomach and duodenum, the blood-vessels leading into them are varicose. In severe hemorrhage from the stomach in which no ulcer can be located on the exterior, the

anterior wall of the stomach is opened by a longitudinal incision, and by counter-pressure over successive areas the mucous membrane is caused to present itself at the opening until the bleeding point is detected. With chromic catgut on a small curved needle the hemorrhagic area is sutured from the mucous side. Over this, from the peritoneal side, a few linen sutures are introduced for protection.

THE SURGICAL TREATMENT OF CANCER OF THE SIGMOID FLEXURE AND RECTUM.

MOYNIHAN (*Surgery, Gynecology, and Obstetrics*, May, 1908) after calling attention to the fact that the first essential in all operations concerned with malignant disease is that the removal of the parts shall be free and that it shall follow certain lines, notes that in the large intestine the growth itself must be removed, also the bowel on each side of the growth, the lymph vessels which drain the bowel, the glands in which these vessels end, all the primary glands and as many of the secondary as are accessible, and finally all the tissues in which these glands and accessible vessels lie. In the case of the sigmoid flexure and of the upper part of the rectum this will involve the removal of the growth and the healthy intestine on each side of it, and the excision of all the glands which lie along the arteries as far up as the inferior mesenteric artery at its origin from the aorta. At the point where this vessel arises a lymphatic gland is always to be found; it lies along the artery before the origin of the left colic branch, and is the highest of the chain, which, beginning at the intestine (in any part), extends upward along the sigmoid superior hemorrhoidal arteries to the inferior mesenteric trunk. This gland, therefore, and all the glands which lie below it, must be removed if the necessary conditions for a radical cure are to be fulfilled. In such removal the inferior mesenteric artery may have to be ligatured either immediately beyond its origin or after the left colic artery has been given off. Probably

in many cases the gland can be stripped down from the vessel by firm wiping with gauze after the peritoneum above it and on each side has been lightly divided.

Moynihan, however, has found this impossible in two of his cases; therefore he ligatured at its origin. The ligature on the artery is the summit of a wedge of material to be removed, the base of which lies at the intestine; nor is the length of the intestine which has to be excised to be specially considered, since the more freely the gut is sacrificed the less likely is necrosis to follow and the more certain is the end-to-end anastomosis to be successfully accomplished. In one of Moynihan's cases, 14½ inches of the intestine was removed and end-to-end suture easily performed.

The two chief points of significance in the operation are:

1. The mobilizing and displacement of the intestine. This is carried out by making an incision through the peritoneum at the outer side of the mesosigmoid, at the points where this mesentery springs from the parietal peritoneum. The sigmoid together with its mesentery is then stripped up from the iliac fossa toward the aorta, the peritoneum on the inner side of the sigmoid being lifted off the posterior surface at the abdomen until the middle line is reached. This stripping extends well upward and downward, until the whole flexure and the upper part of the rectum are attached only by a leaf of the peritoneum on the inner aspect. At a later stage of the operation the descending colon and the splenic flexure are similarly mobilized, by incising the peritoneum to their outer side and above the flexure, and by stripping the gut inward to the middle line. The middle and left colic arteries are in the peritoneal fold, which now forms, as it were, a mesentery for the bowel. The result of this freedom of the intestine is that it can be quite readily drawn down so that the descending colon reaches well into the pelvis, and could, if there were need, be made to extend to the anus. In carrying out this maneuver the transverse colon also may be loosened, so that its central V-shaped dip is straightened. The

splenic flexure is normally, of course, fixed high up on the left side; in its altered position it is made to descend several inches. This procedure has to be performed before it can be realized how perfectly simple it makes this displacement or transplantation (if one may so term it) of the intestine. The result of it is the bowel is rendered so free that it can readily be placed in such a position that the end of the descending colon can be brought into easy apposition with the divided rectum and union then secured by suture; and the vascular supply of the parts is secured by the preservation of the vessels in the peritoneal fold, by which alone the mobilized gut now remains attached.

2. The condition of the vascular supply. It might perhaps be supposed that the severance of the inferior mesenteric artery would deprive a large part of the sigmoid and of the descending colon of its blood supply. This, however, is not the case. If the middle and left colic arteries be examined, it will be found that they anastomose at about two inches from the intestine, in a vessel which runs parallel with the bowel; from this artery straight branches pass to the intestine. That the circulation through this vessel is carried on quite freely after section of the inferior mesenteric may readily be demonstrated in any operation by loosening the clamp applied at the upper severed end of the sigmoid flexure; free hemorrhage occurs at once. An examination of the vascular supply of the transverse and descending colons and the sigmoid shows clearly enough that the sacrifice of the direct supply to the left colic artery, by ligature of the inferior mesenteric, is not in the least likely to interfere with the easy transmission of blood through the vascular arch which the left colic makes with the middle colic above and with the sigmoid and superior mesenteric below. The important outcome of this is that the upper divided end of the sigmoid flexure, at whatever high point the division is made, is freely supplied with blood, even after the inferior mesenteric trunk has been divided.

These two points, then, make it clear that

a great length of bowel may be sacrificed and the normally fixed parts of the large intestine above the division be rendered so mobile that their transplantation is a matter of no difficulty; and further, that the high division of the inferior mesenteric artery, made necessary by reason of its close relation to glands which it is imperative to remove, does not devascularize the upper end of the bowel which is to be engaged in an end-to-end anastomosis.

The precise details of the operation to be practiced will depend upon the exact position the growth may occupy. Mayo describes the procedure necessary in a case of growth about the middle of the sigmoid flexure as follows: The patient is placed in the Trendelenburg position and a long incision made in the middle line. A Doyen's valve-retractor now, or a little later in the operation, gives a good exposure of the pelvis. The intestines are packed away with swabs, only the rectum being at first visible. The sigmoid is lifted up from the posterior abdominal wall, and with the scalpel or scissors an incision is made in the peritoneum of the iliac fossa, immediately to the outer side of the mesosigmoid. This incision is continued down into the true pelvis, keeping close to the intestine, and up along the outer side of the descending colon. A piece of gauze wrapped round the fingers now strips up the mesosigmoid from the iliac fossa, and the separation is continued steadily toward the middle line. The ureter is to be displayed in all the length of the incision, so that its security is in no doubt. The spermatic vessels are also seen, and are carefully handled, to avoid damage to the vein, which tears readily. The freeing of the peritoneum on the inner side of the sigmoid and the descending colon is continued until the aorta is reached, and the inferior mesenteric trunk is recognized at its origin. The bowel is now quite freely movable and can be turned well over to the right, attached by a single leaf only of the peritoneum in which the vessels lie. This peritoneal leaf is translucent; by holding it up to the light the exact line of the vessels can be seen, and the position of many of

the glands defined. The raising of the peritoneum with the bowel has been carried out in such manner as to leave the pelvic wall bare; all fat and glands and vessels are raised up with the fold of the serous membrane. Into the space made bare a large hot moist swab is packed. The inferior mesenteric artery is now surrounded by an aneurism needle at its origin; it is tied in two places with strong catgut, and divided. From this peritoneal wound two incisions are made, the one upward toward that point where the sigmoid flexure or descending colon is to be divided, the other downward over the aorta and along the front of the sacrum to the rectum at the place where its division is necessary. To meet the lower end of this peritoneal incision, a continuation is made of the incision already begun on the outer side of the sigmoid. The two meet across the front of the rectum or the lower part of the sigmoid. The point of their union is determined by the position of the growth. At this stage all that is necessary to remove the wedge-shaped area to be sacrificed is the division of the intestine above and below. This is effected between clamps, after sedulous care has been taken to avoid infection. The liberated mass is then removed. It may be ten inches long at its intestinal base, or even more. The free vascularity of the upper extremity of the bowel may be demonstrated by a slight loosening of the clamp. The approximation of the two ends of the intestine would now seem perhaps to be almost impossible, but the mobilization of the descending and the splenic flexure will soon render their anastomosis easy. When, however, it seems likely that this displacement of the descending colon will be needed, it is desirable to carry it out before the intestine is severed so as to be certain of a perfectly aseptic operation field at the time. The end-to-end anastomosis is then completed in the usual way.

For a growth in the rectum the same principles apply. The highest gland in the lymphatic chain, that which lies on the inferior mesenteric artery, must be taken away. Nothing less will do. The inferior

mesenteric artery must then be divided, either above or possibly beyond the origin of the left colic artery. The peritoneal incision begins to the left of the upper part of the rectum and the sigmoid, and both these are wiped upward with gauze toward the aorta. They are rendered mobile before anything else is done. The inferior mesenteric is then divided, the peritoneum incised downward over the front of the sacrum, the middle sacral artery ligatured, and the sacral hollow wiped clean by repeated applications of gauze stripping little by little. When this has been done the amount of freedom which it is necessary to give the descending colon must be ascertained, and be provided. End-to-end anastomosis, when the bowel has been severed, will not always be possible inside the abdomen, for probably only four or five inches of the lower part of the rectum remain. In such circumstances the upper end of the rectum is tied with a stout catgut ligature before division. After the removal of this growth an assistant passes a pair of forceps into the dilated anus and seizes this tied end of the rectum, which is then inverted until the ligatured end can be made to protrude beyond the anus. The upper divided end of the sigmoid is then pulled through the anus with forceps and an anastomosis made by Maunsell's method. Many of the details of this procedure are the same as those laid down by C. H. Mayo (*Surgery, Gynecology, and Obstetrics*, 1906, iii, 240). The essential differences are that in the method Moynihan describes the bowel above is freely mobilized so that easy end-to-end anastomosis is possible, a greater length is removed, and the excision of the entire glandular group is insured. It is probably safe to say that this last and most essential feature of the operation has never previously been suggested or adopted as a routine procedure. In the operations generally practiced colostomy is performed too frequently. This serious drawback to the cosmetic attributes of the operation can be avoided, strange though it may seem, by a higher division of the arteries, and by a

wider removal of the intestine, provided the principle of displacement of the colon be duly observed.

For low rectal cancer Moynihan has never carried out an abdominal operation, but if adequate measures are to be taken to remove the invaded area in accordance with the principles laid down, no other course than this seems rational. Operations which merely go "wide of the disease" do not meet the necessities of the case. We have not yet sufficiently realized that the surgery of malignant disease is not the surgery of organs: it is the anatomy of the lymphatic system. The inherent futility of all purely sacral operations seems to Moynihan to be quite evident.

If it is true, as Moynihan endeavored to show, that the descending colon and the upper part of the sigmoid flexure retain their vitality after the sacrifice of the inferior mesenteric artery, and if the mobilization of the colon and the splenic flexure permit a considerable displacement of these portions of the bowel, then in all cases of carcinoma of the sigmoid flexure or of the rectum, whether high or low (the proctodeum excepted), an abdominal operation seems desirable, for by this route alone can the whole lymphatic territory be extirpated. The observance of the practice described in this paper should do much to abolish the operation of colostomy as a necessary part of the radical operation for cancer, though it will, of course, always be demanded for those cases in which obstruction calls urgently for relief.

BACKWARD LUXATION OF THE SHOULDER.

ELLERBROEK (*Deutsche Zeitschrift für Chirurgie*, Band 92, Heft 4-6) states that posterior luxation of the shoulder-joint so seldom occurs that further report of observations is necessary. In the Göttingen Polyclinic only nine cases were observed between January 1, 1890, and January 1, 1907, although in this time 584 dislocations were observed in this clinic. Backward dislocation of the shoulder is due in most

cases to direct force applied from before backward with immediate luxation. It can occur indirectly from a fall upon the outstretched hand or the elbow while the arm is strongly adducted and directed forward. It occurs relatively very often during voluntary or involuntary muscular action, as in throwing an object, or in an epileptic seizure, or during difficult birth.

The treatment in the author's clinic consists in placing the patient under anesthesia, making light traction upon the humerus in the direction of its long axis, and at the same time pressing the head of the humerus back into its proper position. Then a fixation bandage is put on, and after fourteen days slight movements may be cautiously commenced. At last massage and electrical treatment are to be carried out. The results in the author's nine cases were good.

RESECTION OF THE INTESTINE IN GANGRENOUS INTUSSUSCEPTION IN CHILDREN.

DAMIANOS (*Deutsche Zeitschrift für Chirurgie*, Band 92, Heft 4-6) calls attention to the high mortality following resection of the bowel in acute gangrenous intussusception in children, and states that he has found in literature only nine cases of cure as against 27 in which the outcome was fatal. In addition to this there are seven cases recorded in which enterostomy was done, all of which were fatal. The mortality is not due to the resection but to the gangrene itself.

The author's method is as follows: If, upon opening the abdomen, the invagination tumor is already gangrenous, he would refrain from resection only when the wide extent of the invagination renders the technique impossible, or when the child is in a marked state of collapse. In these cases a fecal fistula is produced above the intussusception. In all other cases resection is done. After resection, one of two courses may be pursued: the cut ends may be joined at once by end-to-end or lateral anastomosis, or the ends may be sutured into the belly wound and anastomosis be

done at a second operation. The latter choice is to be highly recommended.

The author's first case was published in the *Deutsche Zeitschrift für Chirurgie*, Band 75, S. 439. The second case was as follows: A nine-year-old girl, with a history of several probable previous attacks of intussusception with spontaneous reduction, was admitted to the hospital after four days' illness in a state of collapse. The abdomen was much distended, nowhere tender to pressure, no tumor was palpable. After an enema, dark, bloody fluid was discharged from the rectum. On account of the collapse, which was made worse by the journey to the hospital, the operation was put off until the next morning. On opening the abdomen the peritoneum was found highly injected and its cavity contained a brownish fluid; a tumor the size of the fist was found in the lower right side of the abdomen, and proved to be an intussusception of the ileum. The intestine was gangrenous and tore easily on handling. The intestine was resected from about 10 centimeters below to 5 centimeters above the intussusception, the ends sewed into the belly wound, and the peritoneum closed with drainage. Under free saline infusion and camphor injections the patient recovered from the shock of operation. Two days later end-to-end anastomosis was performed and the abdomen closed with drainage. There was uninterrupted recovery, and the patient was discharged six weeks after the operation with the wound healed; several kilos gain in weight; digestion undisturbed, although 65 centimeters of the ileum had been resected; two or three soft stools a day. Nine months later the patient was in splendid health.

The third case was a ten-year-old boy, taken on the morning of admission with some abdominal pain, especially on the right side, and vomiting. The child was poorly nourished, abdomen much distended, slightly tender; temperature 37.4°; pulse very frequent; stool fluid and not bloody.

The diagnosis was uncertain, so operation was delayed. The symptoms grew

worse, though no mass was palpable. Two days had elapsed, when the patient grew much worse, and died. On autopsy an invagination of the ileum was found 30 centimeters above the ileocecal valve. A portion of the intestine was grayish-yellow and thinned out.

The author calls attention to the great difficulty which sometimes attends the diagnosis of intussusception.

TRAUMATIC LACERATION OF THE CARTILAGES OF THE KNEE-JOINT.

BÜDINGER (*Deutsche Zeitschrift für Chirurgie*, Band 92, Heft 4-6) concludes a study of injury to the cartilages of the knee-joint, as follows: Laceration of the cartilages is one of the most frequent results of traumatism of the knee-joint. The favorite seat of the injury is upon the patella, next upon the summit of the condyles of the femur. The injury consists chiefly in rupture of the cartilages, especially over a subchondral hematoma, or in lateral displacement of the cartilage of incrustation. Direct injuries of the cartilage through neighboring fractures and secondary injuries of the cartilage are not considered.

Numerous lacerations of the cartilages heal spontaneously in a clinical sense. Functional disturbances of the joint occur if the cartilaginous flaps protrude into the joint; if the cleft becomes wider by separation at the line of injury; if a chondritis develops about the site of laceration; or if parts of the cartilage become detached. The clinical diagnosis is, as a rule, impossible. Therapy can be only that which is usual for traumatic gonitis—that is, of an expectant character—and under definite indications, arthrotomy. The operative treatment consists in complete removal of the diseased portion of the cartilage. This demands a complete inspection of the joint cavity, which is best made through a Langenbeck bow-shaped resection incision with tilting up of the patella. Lacerations of the cartilage are found most often near the hypertrophied fatty tissue under the patella, probably because the injury is the

cause of this hypertrophy. Rarely this hypertrophy of the subpatellar fat is the only result of the injury.

OPERATION ON MELANOTIC TUMORS OF THE SKIN.

PRINGLE (*Edinburgh Medical Journal*, June, 1908) after pointing out the extreme malignancy of these melanotic growths and the fact that they develop secondary nodules along the course of the lymph vessels and affect the nearest lymphatic glands, believes that operation should be early and free. His method of procedure is to remove the tumor itself by a wide incision, carrying the cut up along the lymphatic vessels to the first and if possible the second group of lymphatic glands, removing these, together with a strip of subcutaneous and deep fascia. This he advises even though the resulting wound may be two or three feet in length.

SUPRAPUBIC PROSTATECTOMY.

MOYNIHAN (*Practitioner*, June, 1908) after stating that it is but a few weeks ago that he completed his first 100 cases of suprapubic prostatectomy, and after some observations upon the development of the operation, thus gives the details of the surgical procedure.

Since the patient is always a middle-aged or an old man, and is not seldom enfeebled by the long-standing distress and infection which the prostatic obstruction has entailed, spinal anesthesia is employed. From 0.5 to 0.7 Cc. of a 10-per-cent solution of stovaine is injected between the third and fourth lumbar vertebræ in the following manner: The patient is made to sit over the side of the operation table, with his back arched, the elbows resting on the knees. The skin of the back is prepared very carefully, and the area around the point to be punctured is painted with tincture of iodine. A needle, armed with a cannula, is then introduced slightly to the right of the middle line, and a little above a line joining the highest points of the iliac crests. This is above the fourth lum-

bar spine. As the needle is pushed deeply in, it may encounter bone; if so, it is withdrawn, and its direction slightly altered. Its passage through the ligament is recognized by the fact that a rather greater resistance is offered by this structure. As soon as it is pierced the stylet is withdrawn from the needle, and cerebral spinal fluid begins to flow. About 30 or 40 drops should be allowed to escape, and a long, blunt-ended cannula, attached to the loaded syringe, is then passed through the needle. The pressure of the cerebral spinal fluid is sufficient to push the piston of the glass syringe out to its fullest extent. The fluid, mixing with the stovaine, forms a milky liquid, which is slowly injected.

The bladder is then thoroughly washed out and distended with 10 or 12 ounces of saline solution. A median incision immediately above the pubes, 2 to 3 inches in length, is made, the recti muscles are separated, and the bladder exposed. A layer of fat, which should be teased away or wiped away with gauze until the bladder wall is clearly seen, covers it. Some large veins may be seen, and care is taken to push them aside, so that an avascular area on the bladder is exposed. This is incised, and the finger at once passed into the bladder. Then, on each side, a silkworm-gut suture is passed through all the layers of the abdominal wall about one-half inch from the incision, and through the bladder wall. The sutures are tied in such manner as to hold the bladder close to the under surface of the parietal wound. The sutures are left long and are held by a clip on each side. These stitches hold the bladder up to the abdominal wall, and prevent it being stripped away from the back of the pubes during the subsequent manipulations. In not one of his cases has he seen suppuration in the *cavum Retzii*, and he believes that this absence of infection is due to the firm hold secured by these lateral sutures.

The bladder is now explored with the left forefinger, any calculi removed, and the prostate is examined. The fingers of the right hand, which is covered by a rub-

ber glove, are introduced into the rectum; one finger is usually enough, but two may be used. By their aid the prostate is held up toward the bladder, and the stripping of the prostate with the left finger is begun. It is best, as Hurry Fenwick suggests, to pass the index-finger into the internal meatus, and by scraping through the mucosa there, to begin the enucleation of the prostate. The stripping is, as a rule, quite simple, but there is no need to hurry over it. The more cleanly it is done, the more rapid will the healing be. One lobe, generally the largest, is first stripped, below, at the sides, and above; then the other lobe; and finally the anterior part is separated from the triangular ligament. The urethra is divided last, generally by a special "nipping" with the finger-nail; and the prostate is in the bladder. The right hand is then removed from the rectum, and a nurse removes the glove by turning the cuff down over the hand. A vulsellum forceps is then passed into the bladder and the prostate removed. It is astonishing to find how small a cavity is left by the removal of a large prostate.

A catheter is now passed, and the bladder thoroughly irrigated with one-per-cent solution of carbolic acid. If there has been any cystitis, this lavage may well be continued for twenty or thirty minutes, until all oozing is stopped. A stitch at the top and one at the bottom of the wound are introduced, and the operation is complete. No tube is introduced into the bladder. The tube is not necessary, and only does harm. It is not necessary because urine flows quite easily through the wound, where for twenty-four hours it is collected in pads made of gauze and cellulose wadding. If a clot should form in the bladder, the wound may be opened a little by traction upon the lateral sutures. A tube produces pressure on the wound and makes its edges sloughy and dirty, whereas they should remain clean. It materially lengthens the time necessary for healing. In Moynihan's early cases the average date of closure of the wound was the twenty-sixth day. In his last 50 cases there have been very few

that were not healed completely in two and a half weeks. The average day of closure is now the fourteenth day. In one case the wound did not discharge at all after the first thirty-six hours, and the patient left the nursing home with the wound soundly healed on the ninth day. If strict asepsis is observed, and if no tube is used, the rapidity of the healing is much increased. After the second or third day the bladder should be washed out through a catheter every twelve or twenty-four hours. On the third day a Colt's apparatus is applied, with which the patient can sit up comfortably. Colt's apparatus is of the greatest possible value in these cases; it has both simplified and hastened the after-treatment. The bladder should be washed out daily, a soft-rubber catheter being passed, and the lavage continued until the lotion (one-per-cent carbolic acid) returns quite clear. The application of Colt's apparatus does not interfere with this procedure; it rather makes it an easier and a cleaner process, for the lotion after leaving the bladder is conducted to the side of the bed by the narrow rubber tube attached to the glass cup.

The patient should be allowed to sit up in bed from the first, and should be got up out of bed as soon as possible. This was a point upon which Mr. McGill always insisted. In all cases he orders 30 grains of acid sodium phosphate to be taken in one pint of water two or three times daily. It helps to keep the urine sweet and acid, but it is apt to cause diarrhea. The dose should then be lessened. Lemonade is given freely, if the patient cares to take it. As much fluid nourishment as possible is given, and if there is any appetite, solid food is not withheld. It is important to see that the legs are not kept too still; they may be elevated a little at night, or massaged in order to prevent stasis of the blood in them, and to avoid thrombosis of the veins.

In all cases the mass of the prostate should be removed in one piece. This involves the removal of the prostatic urethra. In the first case in which Moynihan did

this, it was quite accidental. The gland shelled out so readily that, before he was aware of it, the whole mass with the urethra was free. He was very anxious as to the outcome of this, but when all went well he was disposed to try the removal of the urethra with the prostate as a routine procedure. This he did, and the favorable experience to which he drew attention in the paper in which he advocated this measure (*Annals of Surgery*, 1904, xxxix, 1) has been repeated in his later cases. In several instances he has taken away not only the prostatic but also a part of the membranous urethra, and never has any disability followed. But what appears to be the whole prostatic urethra is very frequently found when the specimen is carefully examined to be only the part behind the verumontanum; the anterior part of the prostatic urethra is untouched, and the ejaculatory ducts probably remain intact.

On certain occasions difficulties will be encountered in stripping the prostate. These difficulties are chiefly in connection with rather small "fibrous" prostates. The base of the bladder is hard, very stiff and unyielding, and no line of easy separation can be found. When the gland is at last removed, it will not improbably be found on microscopical examination to be malignant. In three cases he found enucleation to be quite impossible, and he therefore had to be content with digging out as much of the gland as he could get. There is another type of malignant case which he has met with on several occasions. The prostate is large, soft, easily separable, except over a small part of one lobe, which can with difficulty be stripped. The gland, when examined after removal, shows a hard, shaggy patch quite different from the smooth, rounded contour elsewhere. Such a gland will show on examination a malignant change in this small area, the remainder exhibiting the usual adenomatous enlargement.

In his own cases there have been 8 deaths—3 deaths in 15 (probably) malignant cases; 5 deaths in 85 simple cases. Of these deaths, two were due to pul-

monary embolism, on the eleventh and fourteenth days respectively; suppression of urine in two cases; shock, death occurring within twenty-four hours, in two cases, both malignant; the other two cases died of gradual exhaustion, due in large measure no doubt to a failure in their work of kidneys long diseased.

TREATMENT OF GONOCOCCUS ARTHRITIS.

IRONS (*Journal of Infectious Diseases*, June 4, 1908) thus summarizes an admirable paper on this subject:

Systemic infections by the gonococcus tend to spontaneous recovery. In many of the cases of gonococcus arthritis the clinical manifestations are acute, and the course extends over a few days or weeks. Certain cases, however, do not recover so quickly, and the condition passes into a chronic stage which may last months or years. In the first class of cases immunity develops rapidly, and clinically little benefit appears to result from the injections of dead gonococci. In the chronic cases, the mechanism of immunity fails to rid the body of the organisms, and they persist either in the original lesions or in one or more foci, such as the prostate, and give rise from time to time to new lesions at various points of localization. When dead gonococci are injected a reaction frequently follows with an increase in constitutional and local symptoms. This reaction is later followed by a period of improvement. The fact that with a dose of constant size the reactions become less with each injection would seem to be a strong argument in favor of the value of the injections in hastening the development of immunity. Clinically in a number of cases the injections of dead gonococci have seemed to be of distinct value.

Many more series of cases must be studied before a definite opinion can be expressed, but the results obtained thus far seem to indicate that in certain cases at least of gonococcus arthritis recovery can be hastened by the injection of dead gono-

cocci. No harm has appeared to follow the injections, and it is possible that the use of larger doses will be found desirable in some cases.

With further work the limitations as well as the advantages of the method will appear, and it should be recognized that while it is attractive theoretically as a specific therapeutic measure, too much must not be expected of it in the way of marvelous cures. It should be used rather in conjunction with other general measures, such as rest, aspiration of joints distended with fluid, massage of the prostate, and other surgical and general hygienic treatment.

The reliability of the clinical gonococcus reaction as a diagnostic procedure will also be determined only after many tests. It has many points in common with the tuberculin reaction, and similarly, too, there may well be cases of gonococcus infection found which do not respond. It appears, however, to be well worth a trial. Should the reaction prove to be reliable, a valuable and much-needed aid will be at hand for the diagnosis of obscure joint, synovial, and periosteal diseases.

Until recently it has not been deemed expedient to carry on experiments on certain other phenomena of hypersusceptibility incident to gonococcus infections such as the ophthalmic reaction, though this work has now been begun. It has already been noted that the local reaction after the injection of dead gonococci is greater in cases of gonococcus infection than in normal individuals.

ABDOMINAL POSTURE IN OPERATIONS ON THE PLEURA AND LUNGS.

ELSBERG (*Medical Record*, May 23, 1908) bases his practice upon an experimental investigation in which he demonstrated that a dog on its back will sometimes stand a double pneumothorax when the opening in each pleura is a very small one, not more than 1 or 2 millimeters in diameter and very slowly made, whilst with the dog on its belly an opening almost 1 centimeter in diameter can sometimes be made in each pleura, if cautiously done,

and the animal will often continue to breathe and survive for hours.

Elsberg operated on all his patients, on whom the opening of the pleura was needful, whilst they were lying flat on their abdomens. Care was taken that the patients were deeply under the anesthetic at the moment the pleura was opened. The author states that he has operated on a large number of patients with empyema, upon two patients with abscess of the liver, upon three with subphrenic abscess, and upon one with a bronchiectatic cavity in the left lung. Patients in whom a normal pleura had to be opened showed unusually few untoward symptoms when the air was allowed to enter the pleural cavity. In the patients on whom an operation for empyema was done it was noted that with only one exception the coughing and interference with the breathing regularly observed when the opening of the pleura is made for this affection was entirely absent.

CHRONIC NEURITIS OF THE ULNAR NERVE.

SHERREN (*Edinburgh Medical Journal*, June, 1908) has been able to collect twenty-one reported examples of this condition, to which he adds two cases of his own. He reviews the information obtained from these cases as follows:

In nineteen cases in which the sex is mentioned, sixteen were males; this is undoubtedly due to their greater liability to injury in this situation, for of the sixteen cases due to injury in which the sex is mentioned, only one was a female.

The deformity in the region of the elbow was usually cubitus valgus, due, in the majority of cases, to an epiphyseal separation or fracture of the lower end of the humerus. Dislocation of the head of the radius was the cause in one patient, and in another the deformity was congenital. In some instances a backward enlargement of the internal condyle due to injury was the only deformity present.

A considerable time elapsed between the onset of the deformity and the development of symptoms, varying from six to

thirty-five years. In most instances no cause other than the deformity could be discovered, but one patient thought that change of work had had something to do with it.

In all in whom there is a note on the condition of the nerve behind the internal condyle, it was found enlarged in a spindle-shaped manner, and when examined at operation was smooth and free from adhesions to surrounding parts. Interstitial neuritis was seen in the two instances in which this portion of the nerve was microscopically examined.

This chronic neuritis appears to be due to the irritation or pressure to which the nerve is subjected behind the internal condyle in movements of the elbow, owing to the alteration of its bony relationships here. The length of the nerve is increased, and in those cases in which the cubitus valgus is marked, the olecranon is displaced and is prominent. In other cases the constant passage of the nerve over a backward enlargement of the internal condyle in movements of the elbow is the irritating agent. These internal injuries, and not those due to external violence, seem to be the cause of the fibrosis.

In most cases adult life was reached before symptoms presented themselves; thus, out of fifteen examples in which the age is noted, eleven occurred between the ages of thirty and forty-five, one at sixty-three, one at twenty-eight, and two at nineteen. It is not altogether easy to explain the variations in the time at which the symptoms arise and the long latent period in many cases. But a similarly long latent period is present in patients who develop symptoms of nerve involvement in association with cervical ribs.

The fibrosis is slow and the interference with the functions of the nerve gradual; a marked growth of fibrous tissue may take place under these circumstances before pain or muscular wasting occurs. From the size of the spindle-shaped swelling when the patient first comes under observation, it is evident that the condition has been in existence for a considerable time. This and

the greater liability to chronic inflammatory processes after youth has passed probably account for it to a great extent.

Errors in diagnosis still arise in connection with these cases. As the abductor-opponens group of muscles is not affected, the appearance of the hand, if muscular wasting is present, limits the lesion to the ulnar nerve after the diagnosis of a peripheral cause has been made.

When pain arises in the distribution of the ulnar nerve accompanied by wasting of the intrinsic muscles supplied by it, apart from a recent injury, this condition should be suspected, the course of the nerve in the forearm investigated, and the condition of the elbow-joint carefully examined. If cubitus valgus is present which is not due to injury, the possibility of the symptoms being due to dislocation of the ulnar nerve must be considered. In these cases the symptoms arise suddenly following a fall with flexed elbow, and the ulnar nerve, which is not necessarily enlarged, can be made to pass over the internal condyle.

It is essential to make the diagnosis, as the treatment of the two conditions is different. The condition of sensibility and the electrical excitability of the affected muscles should be carefully investigated, for on this depends the correct treatment.

Permanent cure is only to be expected as the result of operative treatment. In early cases great improvement follows rest, but relapse takes place when the patient resumes the use of the limb. When the signs of interference with the functions of the nerve are not complete (incomplete division), means must be taken to remedy the deformity and so prevent injurious pressure upon and irritation of the nerve. This will vary with the cause of the deformity, and necessitate excision of the elbow, or chiseling a fresh groove for the nerve behind the internal condyle, or osteotomy of the humerus. In one case the nerve was removed to the front of the joint and the nerve sheath split. Sherren does not view with favor splitting the sheath of the nerve. It is open to the objection that adhesions form between the nerve and ad-

jacent structures, and it leaves the way open for increased formation of fibrous tissue in the nerve. The treatment should be by removal of the cause of the neuritis.

When the signs of interference with the functions of the nerve have advanced to the establishment of the reaction of degeneration, or in cases of incomplete division in which the relief of pressure fails to cure the patient, the damaged portion of the nerve must be removed and the anatomical continuity restored.

EFFECTS OF SUN RAYS AND ARTIFICIAL HEAT.

CORBUSIER (*The Military Surgeon*, June, 1908) classifies this subject as follows:

1. Siriasis (insolation)—that pathological condition in which the actinic rays are the predominating factor. It is characterized by violent headache; vomiting; dryness of mucous membranes; very high fever, from 105° to 110° F.; rapid pulse, often irregular and intermittent; cyanosis; intensely hot skin, first moist, then dry; deep or stertorous breathing; absence of corneal and other reflexes; subsultus tendinum and convulsions; unconsciousness; contracted or irregular pupils; scanty urine; coma or sudden death. Dr. Warthin, Professor of Pathology of the University of Michigan, states the pathological findings in cases affected by the ultra-violet rays to be chiefly exudative meningitis with marked hyperemia and scattered hemorrhages through the cortex. These findings account for many of the symptoms just mentioned and particularly distinguish this disease from the effects of heat alone. These symptoms may occur while the patient is in the sun, or may not manifest themselves until many hours after exposure.

2. Sunstroke (sun-traumatism) cases, due chiefly to sun heat, but in which the actinic effect may play some part. Characterized by sudden faintness and quick recovery, or else mental and physical fatigue; thirst; headache; vertigo; confusion; photophobia; pain in the limbs; injected cornea; skin moist and cool; perhaps nausea and

vomiting; rapid, shallow respiration, never stertorous; small, compressible pulse; normal or subnormal temperature; pupils normal or dilated; no complete loss of consciousness; reflexes present; perhaps irritable bladder; more rapid recovery than in siriasis. These cases occur when the subject has been exposed to the sun, particularly while undergoing physical exertion. This condition is often a precursor to a more severe attack developing into true siriasis.

3. Heat exhaustion (heat-stroke)—effects of artificial heat alone. Characterized by symptoms quite similar to those just mentioned: headache; vertigo; moist, cool skin; shallow respirations; small pulse; subnormal temperature, being characteristic.

It will be seen that the writer has not attempted to give a complete clinical picture of these diseases in the present paper, but he hopes that what has been said will be sufficient to stimulate investigation and a more careful study of this important subject, tending toward a more accurate differential diagnosis of these classes of cases.

The author states that while serving in the tropics he had an experience which led him to discover accidentally the value of orange-yellow. He had been wearing the campaign hat according to custom, but suffered from frequent acute headache during exposure to the sun. One day he chanced to wear a khaki cap lined with orange-yellow silk, and found that the usual headache did not occur. As the result of experiment he discovered that the immunity to headaches was due to the color of the lining. Since then he has worn an orange-yellow or red lining in his headgear, and recommends its use to any patient affected by the sun's rays, always with good results, this theory having been evolved by independent experimenters, and it having been proved that the use of material which filters out the short solar rays (actinic rays) is a preventive against sunstroke, so-called. So it seems also to be proven that the actinic rays are the contributing cause to that condition. It is on the basis of these facts that the classification above given is proposed.

The author quotes numbers of instances of complete immunity against the direct effects of the sun upon the part of those who had suffered repeatedly before as the result of lining their helmets and backs of their coats with orange-red.

Duncan proposes not only that all persons exposed to intense sunlight have their helmets lined with orange-red, but they should also wear an orange-red shirt, and a detachable strip of color over the spine.

Sambon advises white men in the tropics to wear black, red, or orange, as these colors exclude the short rays of the sun.

Lord Roberts stated that for the first time in his long experience he had found comfort under the Indian sun after using a combination of orange and red. In contrasting the resistance of the Filipino to that of the American, Corbusier says that the former can withstand the direct rays of the sun much better than the latter, but if the two were put in the stove-hole of a ship the first to be overcome by heat would be the Filipino, and this would seem to show that the white man, while he can withstand a high atmospheric temperature of itself, yet not being naturally protected he is more susceptible to the actinic rays of the sun than a man of a pigmented race. By actually passing light through pigmented skin Sambon and others have shown that the ultra-violet or short waves are filtered out in direct proportion to the density of the pigmentation. It has been further shown that a given thickness of unpigmented skin allows twice as many heat rays to pass through as the black skin.

PRIMARY CARCINOMA OF THE VERMIFORM APPENDIX.

In the *American Journal of the Medical Sciences* for June, 1908, McWILLIAMS reports three instances of this condition and has collected 87 cases from literature. The conclusion of his study would seem to be that primary cancer of the appendix may be expected in about 0.4 per cent of cases; that the affection is most frequently observed before the thirtieth year; that enlarged

glands are exceptional; that in the majority of cases the tumor is situated near the tip of the organ, and that in certainly 50 per cent of cases no visible tumor can be seen on inspecting the appendix from the outside, whilst in one-third of the cases tumor could not be seen with the naked eye even after the appendix had been opened. Enlarged lymphatic glands are regarded as being present in 8 or 9 per cent, and microscopic examination of such glands demonstrated that they were not necessarily cancerous, from which it is argued that probably cancer of the appendix involves the lymphatics very slowly. In 79 cases the patients were operated on, and the duration of the cure is given in 30 instances. Seven patients were well five years or more after the original operation; 13 were in good health three years or more afterward; 21 showed no sign of any recurrence two years or more after operation. In only one instance of the 79 cases is it definitely stated that the growth recurred. The symptoms are not sufficiently characteristic to make a diagnosis possible without operation, but any circumscribed tumor in the appendix should always arouse the suspicion of cancer and should suggest a wide excision of the mesoappendix, together with the removal of enlarged glands.

PRIMARY TUMORS OF THE ADRENAL GLAND IN CHILDREN.

TILESTON and WOLBACH (*American Journal of the Medical Sciences*, June, 1908) report the case of an infant aged sixteen months, admitted to the hospital because of orbital tumor, in which the post-mortem examination ultimately showed a primary sarcoma of the suprarenal gland. In commenting upon this case the authors divide tumors of the adrenal gland in children into four classes: (1) Those with metastases to the skull (Hutchison's type); (2) those of simultaneous sarcoma of the liver and adrenal; (3) those associated with precocious maturity; and (4) those not falling under any of the preceding headings.

The Hutchison's type, of which fourteen

cases have been reported, occurs only in infants or young children, is characterized by spontaneous or post-traumatic ecchymosis of one or both eyelids, followed by an exophthalmos which is usually unilateral, which in turn is succeeded by a growth in the adjacent temporal region, with enlargement of the lymph nodes. Tumor in the renal region is usually not felt. The tumor grows with great rapidity, and death occurs from anemia and cachexia. Even if the abdominal tumor is large and palpable it does not cause ascites, but presents a secondary anemia which may become extreme. Twelve of the fourteen reported cases were not over three years of age, and four were under one year. The eldest case reported was nine years; the male sex predominated. The adrenal growth is usually unilateral, hemorrhagic, and exhibits little tendency to infiltrate the surrounding tissue. Skull metastasis was present in all cases, was in the ribs in four cases, was in the spine and tibia each in one case.

The favorite seat of metastasis next to the ribs is the costochondral juncture, the resulting picture being much like that of rickets. While the skull growth may be very large, the brain is not involved, excepting by pressure. The growth is nearly always sarcoma.

The second type of adrenal tumor in children is characterized by simultaneous round-celled sarcoma of the liver and adrenals. It is encountered as a congenital tumor in the first week of life and forms an enormous growth without ascites, and as a rule without jaundice. It forms a diffuse infiltration.

The third type chiefly affects girls of twelve to fourteen years. It runs its course in years. The face and pubes become covered with a growth of hair, and the external genitals are as fully developed as in the adult. These children are large, fat, brown, but not distinctly pigmented, dull in intellect and sullen in disposition. The tumors causing this group of symptoms are likely to be hypernephromas rather than sarcomas. Precocious maturity, or giant growth, alone or combined, have been found also in tumors

of the pituitary and pineal glands, of the testes and ovaries; and retardation of growth has been associated with lack of development of the thyroid (cretinism) and of the adrenal glands.

In the diagnosis of this condition the author states that tumor of the orbit in infants and young children should arouse the suspicion of metastases from an adrenal growth. If an abdominal tumor be found it is almost certainly of adrenal origin, and this would be still further corroborated by enlargement of the preauricular glands, which renders the diagnosis of sarcoma of the orbit unlikely. Chloroma presents almost identical growths, being associated with tumors of the orbit in two-thirds of the cases, with exophthalmos usually as the first symptom, but this may be excluded in the absence of leukemic changes in the blood. Myeloma may cause bony growths about the skull, but is exceedingly rare in childhood; the presence of the Bence-Jones body in the urine would render the diagnosis of myeloma certain, while its absence is not conclusive. The authors state that abdominal tumor associated with precocious maturity is practically certain to be of adrenal origin, if tumors of the ovaries or a retained testis can be excluded. Other adrenal tumors cannot be distinguished from tumors of the adjacent tissues, especially of the kidney.

Concerning treatment, the only hope lies in early radical removal, nor does this seem a promising procedure, since these tumors usually pass unnoticed until either their great size or the presence of metastases attracts attention, and then it is too late as a rule for successful operation.

COMPRESSION OF THE PELVIS IN OPERATION FOR EXSTROPHY OF THE BLADDER.

WILMS (*Deutsche Zeitschrift für Chirurgie*, Bd. xciii, Heft 3) describes an apparatus which he has invented for compression of the pelvis in carrying out the Trendelenburg operation for exstrophy of the bladder. By means of this the large pressure sores caused by the compression by

means of a band are avoided. The apparatus consists of a large curved iron, in each end of which is a set-screw which carries on its inner end a block of wood, upon each of which are mounted three nails which point toward similar nails in the opposite block. The movement of the screws causes the nail points in one block to approach those in the other. The whole apparatus is essentially a large clamp. Each of the nails has about one centimeter from its tip a collar to determine the depth to which it shall penetrate. The ilium is chiseled away from the sacrum on each side, and after waiting eight days for the wounds to heal the apparatus is sterilized and an incision made in the skin on each side just behind the spines of the ilium for the reception of the nail points. The edges of the bladder are then freshened and the deep sutures put in but not tied; the nails of the clamp are then set and the screws tightened so as to compress the pelvis in such a way as to bring the edges of the bladder together when the stitches are tied. The other stitches can be put in at leisure. The clamp is kept in place four or five weeks. It causes no pain and gives good results. The patient can easily be kept clean while it is in place.

TREATMENT OF GONORRHEAL ARTHRITIS OF THE LARGE JOINTS BY MEANS OF PASSIVE HYPEREMIA.

BAETZNER (*Deutsche Zeitschrift für Chirurgie*) reports from Bier's clinic 40 cases of gonorrhea of the large joints treated by Bier's hyperemia method. Of these 19 were of the wrist, 10 of the elbow, 7 of the shoulder, and one of the knee and ankle. Thirteen of these were treated early in the course of the disease, and all were cured without diminution of function of the joint. Twenty-seven cases were presented for treatment from ten days to twenty-one weeks after the onset. Of these 12 were completely cured; 9 showed some diminution in the function of the joint, while the remaining 6 have joints of about half their normal functional power.

The technique of the treatment is impor-

tant. In the involvement of the wrist and elbow there is placed on the arm a thin, transparent rubber band about $2\frac{1}{2}$ inches broad, so that its turns almost cover the joint. When the ankle or knee is involved the band is put upon the thigh. In case of the shoulder-joint a piece of soft-rubber tube, sheathed with felt to avoid the bad effects of pressure, is applied around the shoulder so firmly that marked venous congestion of the arm occurs; then it is fastened with a clamp or by tying. It is held in place by a bandage passing under the opposite arm. The constriction should always be of such grade that the extremity shows a fiery-red edema, and at the same time an easily palpable pulse. Pain and blue color in the part must always be avoided. This hyperemia is continued twenty to twenty-two hours. The subsequent treatment consists of passive motion and massage.

By means of this method of treatment the author has found that the pain has diminished from the beginning of the treatment and has very soon disappeared entirely; the clinical course of the disease is milder and is very much shortened, and the functional results are better than by other methods. The joint can be mobilized earlier, and ankylosis has not occurred in any of his cases. The method is simple, easy to apply, and its cheapness puts it within the reach of all. It constitutes a very important advance in the treatment of gonorrheal arthritis.

THE CUTANEOUS DIAGNOSIS OF SURGICAL TUBERCULOSIS.

MALIS (*Deutsche Zeitschrift für Chirurgie*, Bd. xciii, Heft 3) reports in detail 105 cases in which he has used the skin-inoculation test for suspected surgical tuberculosis, and concludes as follows:

The skin-reaction method for diagnosis of tuberculosis is absolutely without danger. The action is purely local. There are no contraindications to its use. It is the only method of diagnosis which can be used freely on man for experimental purposes. In every patient in whom tuberculosis is present, except very advanced cases, a posi-

tive reaction is obtained. This is true even of the inactive forms of the disease. A negative result is obtained only in cases in which no tuberculosis is present and in very advanced cases such as are easy to differentiate. The strength of the reaction gradually diminishes as the disease progresses, until finally it entirely disappears. This affords a means of studying the progress of the disease.

In surgical tuberculosis the reaction is generally much more marked than in the pulmonary form.

THE INFLUENCE OF PURE OXYGEN UPON WOUNDS AND INFECTIONS.

BURKHARDT (*Deutsche Zeitschrift für Chirurgie*, Bd. xciii, Heft 2) reports his investigations upon the influence of pure oxygen upon wounds and wound infections, and concludes as follows:

Contact with pure oxygen causes a marked arterial hyperemia in the wound, the surface remains moister, and the formation of granulations is promoted. While in artificial culture media the growth of facultative aerobic bacteria is much retarded by oxygen, in the animal body their growth is but little hindered, although their toxic power is slightly reduced. When oxygen is brought into contact with the peritoneum there is produced a mild inflammation and hyperleucocytosis, and in this way absorption is retarded. Ozone exerts a more powerful influence than oxygen, especially in the body cavities.

Correspondence.

THE TREATMENT OF PERTUSSIS BY MEANS OF THE ABDOMINAL BINDER.

To the Editor of the THERAPEUTIC GAZETTE.

SIR: Owing to a typographical error in the September issue of the THERAPEUTIC GAZETTE, Dr. Kilmer's name was spelled "Kehun." Will you please see that the correction is made, as I wish to give credit to Dr. Kilmer? Yours truly,

PAUL B. CASSIDY.

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ORIGINAL COMMUNICATIONS.

THE LOCAL USE OF ACETYL-SALICYLIC ACID (ASPIRIN) IN THE TREATMENT OF FOLLICULAR TONSILLITIS.

BY GEORGE FETTEROLF, A.B., M.D.,

Laryngologist to the Phipps Institute, the White Haven Sanatorium, St. Vincent's Home, and the Phoenixville Hospital; Demonstrator of Anatomy, University of Pennsylvania; Fellow of the College of Physicians of Philadelphia.

In an article published in *American Medicine* for September, 1906, Dr. C. F. Kieffer calls attention to the efficacy of aspirin locally applied to the tonsils in acute follicular disease. He claims that with this method the patient suffers much less than with any other form of treatment, that the duration of the attack is considerably shortened, and that in no case has rheumatism been a sequel.

I have records of twenty-six private patients on whom I used this method during the past year, and my results have borne out all that is claimed for it. In all but two of the cases the relief afforded was marked and prompt. Of the two in which the treatment was inefficacious, one proved to be virulent diphtheria beginning with the typical appearance of follicular tonsillitis, and in the other the local applications were made by an unskilled friend of the patient, and it therefore should hardly be included in the series.

The technique of the procedure is very simple. When the throat is examined a probe or applicator, cotton-wrapped at the tip, is gently rubbed over the surface of the tonsils. If the latter are very slippery and covered with a film of mucus, as is usually the case, a solution of sodium bicarbonate, 1.0 to 30.0, is mopped over them for the purpose of clearing away the mucus. This, if gently done, is far better than spraying as it causes less gagging and

leaves the throat more quiescent for the subsequent treatment. Gargling is likely to be painful and is not nearly so effective in removing the mucus. After the tonsils have been thoroughly cleansed the aspirin, which should have been finely powdered in a mortar, is applied in the following manner: A small flexible applicator is firmly but softly wrapped at the end with cotton, moistened with water, and dipped into the powdered drug. There will be found an excess of the powder gathered on the wet cotton, and this should be removed by tapping the applicator a few times. This little maneuver is quite important, as otherwise, during the rubbing of the tonsil, the excess will drop off and fall into the larynx, usually causing violent paroxysms of coughing, which on account of the inflamed condition of the throat are exceedingly painful. With the probe thus prepared every portion of the tonsillar surface should be carefully and gently rubbed. The upper, lower, and posterior surfaces should not be neglected, and it will usually be necessary to bend the probe at various angles to reach these portions. After one tonsil has been treated the other, even if apparently not diseased, should be gone over similarly, plenty of time being given so as not to excite too greatly the pharyngeal reflexes.

Another method of applying the powder is by means of a blower. I have had a large

silver Eustachian catheter "blunderbussed" at the end, so as to spread the powder, and use it in the following manner: The ring end of the catheter is dipped into the powder, which is then shaken down toward the bell-mouthed end. After the cut-off from the compressed-air tank has been firmly attached to the catheter, the latter is introduced into the mouth and directed toward the tonsil. A quick jet of air, at not over five pounds pressure, spreads the powder fairly evenly over that portion of the tonsil toward which the catheter is pointing. This is repeated until all the available surface of both tonsils has been covered. Whenever it is practicable I add to the technique by spraying the nose and nasopharynx with a warmed solution of sodium bicarbonate, after which I introduce the catheter into the nasopharynx, turn the tip upward, and with a jet of air cover the vault of the pharynx with the powder, thus getting at any possible involvement of the pharyngeal tonsil.

When a patient presents himself with a spotted and acutely inflamed tonsil my procedure is as follows: A smear from the throat is at once sent to an expert bacteriologist to be examined for diphtheria organisms. In this way one can get a report within an hour and save much valuable time. If this is impracticable a culture is taken, and no antitoxin is administered until a positive report comes back, or the local and constitutional symptoms are such as to strongly suggest the presence of true diphtheria. The lymphoid tissue of the throat is then treated as described above and the patient put to bed, a course of fractional doses of calomel followed by a saline laxative ordered, and only soft diet permitted. No antirheumatic drug is administered internally, unless for psychological reasons, since experience has shown that the local application is all that is necessary.

Usually three applications of the aspirin at intervals of twelve hours will be found sufficient. At the end of this time, twenty-four hours in all, the fever and febrile symptoms have usually markedly diminished and the local symptoms greatly ameliorated. At the end of thirty-six hours the patient

can as a rule swallow with but a minimum of discomfort. Quite frequently after the first application such relief is obtained that deglutition is readily performed.

The local changes which follow the aspirin applications consist of a marked blanching of the tonsillar surface, combined with slight shrinkage, the whitening of the mucosa remaining for some time after the topical application of the drug, not infrequently until the next visit.

Occasionally one will see a case in which only one tonsil will present the characteristics of a follicular tonsillitis, while the other, with the exception of some congestion, is normal. One case seen last winter in the person of a medical friend presented this picture and naturally inclined me to think more strongly of a diphtheritic than of an ordinary follicular infection. A smear was made, examined at once, and proven to be negative as far as diphtheria was concerned. A thorough application of aspirin to only the affected tonsil secured decided relief, but on the next visit the opposite tonsil showed some swelling with a few indistinct whitish patches at the mouths of the follicles. This was treated similarly, and, probably due to its being caught early, the disease subsided promptly without further treatment. This showed, as was noted later in others, that attacks can be aborted if the patient is seen early enough, and the result of this experience has been that patients who suffer from recurrent attacks of follicular tonsillitis now present themselves on the first suggestion of sore throat and by prompt treatment are usually prevented from having a fully developed attack.

So efficient and so certain has aspirin been in its local use that it can apparently be used as a therapeutic test. There have not been enough cases noted to render this certain, but my experience so far would seem to show that if decided relief is not obtained in twelve hours the affection in all probability is not rheumatic, but dependent upon some other cause, in all likelihood diphtheria.

The citation of individual cases would be tiresome and profitless. So general, so

tember, 1890) considers it superior to digitalis in functional disorders, especially angina pectoris, for which it is almost a specific.

J. Fletcher Horne (*Lancet*, Dec. 5, 1891) says that its action appears to be on the cardiac center of the medulla, and thus, through the vagus and sympathetic, to the heart. He also states that it has a sedative action, lowering arterial tension without the dangerous depressing and paralyzing effect of opium and chloral, or even of belladonna, and that it invigorates the cardiac plexus and improves the nutrition of the heart, as shown by the increased tone of the pulse.

P. W. Williams (*Practitioner*) states that it acts chiefly upon the accelerator nerves of the heart and the sympathetic ganglia, shortening the diastole and stimulating the spinal vasomotor nerve centers.

Rubini, of Naples, says it is the counterpart of aconite.

A. R. Cushny says it has no similar action to digitalis.

Dr. Gordon Sharp, of Leeds, writes in a paper (*Practitioner*, 1894, p. 157): "This drug does not possess any stimulant action on the circulation of the kidneys. The slight stimulant action of the resins in the drug is the cause of the increased secretion; and this action is all the influence it has." He is of the opinion that it is of no use as a circulatory remedy; and further, that the resins are the only active part of the drug, and that even those have only a faint action upon the kidneys.

Is there a cause for such diverse reports? Have they all a good proper specimen to experiment with? Why should one experimenter say that it is an effective remedy and another say that it is inert?

What I desire especially to call the attention of the profession to in regard to this remedy is its importance in cardiac therapy, *when given with other cardiac remedies*. One will often obtain some of the most marked results, much more marked than when the remedies are given independently. It seems to fill a niche in cardiac therapeutics that is quite unique. I have frequently given other remedies for a consid-

erable length of time, with little or no effect; but when I have added cactus I have obtained the most happy results. It seems to be most effective when given in full doses with other heart remedies that are used in frequent small doses. I give it in this way in cases of organic disease with much circulatory disturbance, in connection with digitalis, nitroglycerin, caffeine, strophanthus, strychnine, and atropine. Its prolonged use with arsenic and pyrophosphate of iron seems to increase the tonic effects of these drugs in heart cases.

I have frequently observed cases in which a full dose of digitalis caused nausea and vomiting, but in which, when the dose of digitalis was reduced to one-half and cactus added, the nausea disappeared, and the good effects of both medicines were immediately noticed. In fact, the result was quite as good, if not better, than would usually follow the full dose of digitalis. In this connection I would state that I think much of the stomach derangement from digitalis comes from the use of too large doses. In many cases, if half the dose is given and the interval diminished one-half, there will be little or no nausea, and better results from the medicine, for we then get a continuous and even action from proper absorption of the drugs.

It seems to me that cactus stimulates the motor, but more especially the inhibitory, nerves of the heart. It strengthens and improves the systole, increases the muscular energy of the heart, and increases the tone of the organ.

It is often a great comfort to the person suffering with nervous palpitation or irregularity, as it tones up the heart and takes away the disagreeable feeling of weakness that is often present. Its primary action seems to be confined exclusively to the heart, giving that organ increased power by strengthening the motor nerve forces, and exerting a marked governing influence upon the regulating nerves. We are told by some that it raises the blood-pressure. If the heart is slow and weak cactus accelerates it; if weak and rapid, it seems to have a subduing and quieting effect. Its action upon the controlling nerves of the heart is to

steady them, and thus prevent intermittence and irregularity, more especially in functional cases; but often good results are obtained in old or new organic heart disease, when cactus is used in conjunction with other remedies.

I have often observed a more tonic effect upon the heart from three minims of tincture of digitalis combined with fluid extract of cactus grandiflorus five or ten drops, and caffeine one-fourth to one-half grain, than from a large dose of digitalis by itself. Its effects are more lasting than those of other cardiac tonics, such as nitroglycerin and caffeine.

While the action of cactus grandiflorus is, as I have stated, confined to the heart and nerves, it apparently affects the kidneys also; but this action, I think, is no more than should be expected from the improvement in the general circulation. In the same way all the tissues seem to be better nourished. It is not a strong general tonic, but a soothing upholder of the heart and a husbandler of its strength. Perhaps the best description of the action of cactus on the heart would be a calming, regulating, mild heart tonic; although in organic disease of the heart, such as valvular disease, dilatation, degeneration of the walls, and myocarditis, when associated with nervous phenomena, such as irregularity and excitement, it is a very valuable adjunct to the stronger heart remedies. In grave cases, however, it should not alone be depended upon.

As illustrative of its uses I shall cite three of the many cases in which it has been given by me in combination, with decided advantage:

Case 1.—A boy with marked mitral disease and dropsy had been taking digitalis and other remedies for a period of two months, without much effect. When cactus was added to the digitalis, caffeine, etc., he began at once to improve in every way. The heart commenced to tone up, and the functions of the liver, stomach, and kidneys improved. As the strength of the heart increased, the dropsy disappeared. This case shows the benefit sometimes derived from combining cactus with other remedies in medicating the heart.

Case 2.—Mr. A., who had an old, degenerated heart, and was greatly troubled with palpitation and markedly conscious of the heart action, had tried various sedative and tonic heart remedies without much seeming result. Finally he was wonderfully benefited by the use of cactus grandiflorus, when combined with nitroglycerin. He said that the pills always gave him immediate and great comfort. He had previously been using the nitroglycerin with doubtful effect.

Case 3.—Dr. S. had marked intermittence and irregularity of the heart, following a severe influenzal attack. This continued for many months. He used all sorts of cardiac remedies in vain. I gave him a pill containing extract of cactus grandiflorus, digitalis, and citrated caffeine, which had the effect of immediately correcting the trouble. I gave him the last two ingredients in small doses. He was quite an aged man, with a weak heart, possibly degenerated. For a long time he had ceased smoking; but when he began to smoke once more his heart at once became irregular and intermittent. This happened every time he resumed smoking. He, however, discovered by experimentation that he could smoke without the occurrence of this trouble if, at the same time, he took one of these pills. About a year later I met him in a street-car, and he said, taking a small bottle of pills out of his pocket: "I can, with these, take comfort in my smoke. Thank God for Dr. Curtin's pills, as they enable me to use tobacco again." He had experimented with digitalis, caffeine, and other remedies without the cactus, but they did not afford him relief.

I have noticed that those who have used cactus grandiflorus beyond the experimental stage have faith in it, while those who employ it least condemn it as useless.

CONCLUSIONS.

1. Be sure that a good reliable specimen of the drug is secured, one that has the proper strength; in other words, one that can be depended upon to do the required work.

2. Cactus is a mild tonic stimulant for the heart, especially acting upon the inhibitory nerves of that organ, relieving it of some of

immediate, and so marked are the results that patients who have had previous attacks are enthusiastic over the relief afforded and no longer look forward with dread to any future attack. They know that they will be able to avoid the week of wretched discomfort usually accompanying the disease and the four or five days in which swallowing is so agonizing that they will suffer the tortures of thirst and the weakness incident to the non-ingestion of food rather than endure the pain caused by attempts at swallowing.

Knowledge of this method of treatment

should really receive wide dissemination, since it presents many features of value and marks a distinct advance in therapeutics. The technique is simple, being applicable as readily at the bedside as in the specialist's chair; the rationale is obvious; it can be used with efficacy in all stages of the disease; its immediate results are good; it prevents dangerous sequelæ, and if used early patients are saved an attack of one of the commonest and most pitifully painful diseases in the acute inflammatory class.

330 SOUTH SIXTEENTH STREET, PHILADELPHIA.

CACTUS GRANDIFLORUS AS A CARDIAC REMEDY.¹

BY ROLAND G. CURTIN, M.D., PHILADELPHIA,

Consulting Physician to the Presbyterian Hospital and the Philadelphia General Hospital.

I have been using *cactus grandiflorus* more or less constantly for the last thirty years; or, at least, ever since the appearance of the article written by the elder Dr. A. Flint, of New York. I have had a large experience, and I feel that it is a very valuable remedy which the profession generally do not appreciate. There is no drug that has been so enthusiastically extolled by a number of the profession, and quite as vigorously denounced by others as being entirely valueless as a remedy. The experience that I have had makes me feel that this drug, if of good quality and properly used, should have a better name; for the more I use *cactus grandiflorus* in selected cases, the greater grows my confidence in it, and I feel satisfied that this remedy has a place in cardiac therapeutics.

I have used it for many years; but after reading some of the experiences of experimenters whose reports seemingly disclosed the fact that it was almost or quite worthless, I ceased using it for a time. However, I soon found that I had lost the assistance of a good faithful remedy, and returned to its use. I am now more convinced of its usefulness than ever before.

The great trouble with many physicians is that they expect too much from this remedy. They think it should cover the

whole field of cardiac therapeutics. If they have a case with a faltering heart, a heart that has defied the usual strong remedies, they try *cactus grandiflorus*, and because it does not immediately strengthen the exceedingly weak and perhaps dying heart they at once condemn it as being of no good whatever. This is not fair, for under the circumstances just cited it is, as it were, using a needle where a crowbar is needed. No one that has been properly instructed in cardiac therapeutics would call *cactus* a powerful tonic for the heart; for such is not the case. It is a mild cardiac tonic, a supporter and a steadier of that organ when in a weak and irritable condition. It is more like a persuader than like a tractor; largely a regulator, not a mainspring. To use *cactus* when *digitalis* is indicated shows bad judgment or a want of knowledge. It is sending a small urchin on an important mission that only a man is fitted for.

This remedy will not favor the production of hypertrophy nor draw in the walls of the heart in dilatation, as will *digitalis*; neither will it change back to a healthy condition degenerated muscular fiber, and it has very little influence as a diuretic. I feel, however, that when given intelligently, in some of the minor ills of the heart, *cactus grandiflorus* will do much good. Its use in conditions to which it is not adapted has probably been one of the causes of the small

¹Read before the American Therapeutical Society, Philadelphia, 1908.

favor in which it is now held. I know that it is a valuable remedy, *more especially when used in combination with other heart tonics*, lending valuable aid to their action.

It will greatly assist other remedies in severe cases, and will not do harm, as some other heart remedies may. It is well borne by the stomach, is effective after long usage, and has no cumulative effect. It is not good in every heart condition, but it has its proper place in cardiac therapeutics, and when used in selected cases is a very useful remedy. It can be used for an indefinite length of time without doing injury to the stomach, the nervous system, or the heart. In simple nervous cardiac weakness, with irregular or tremulous action, it is of great benefit. One additional advantage that it possesses is that in large doses it has no poisonous action. It is a safe remedy. A beneficial remedy usually becomes injurious when used to excess, but this is not true of cactus; and if it does no good, it can do no harm—which is not the case with some other remedies that are given for heart affections.

In none of the cases in which I have used cactus grandiflorus has it seriously disturbed the stomach, except in that of an old woman who seemed to have an idiosyncrasy that prevented her taking this as well as many other remedies. At first I used to give it in the form of a fluid extract, five to ten drops, four times a day. Later I used a tincture, fifteen to twenty-four drops, and during the last fourteen years I have used the extract in pill form, generally associated with other cardiac remedies. I feel assured that when one can get a *good, pure article* it makes but little difference in what form one prescribes it. I feel satisfied that much of the ill repute of this drug comes from "substitution," or the dispensing of an inferior article, often made from other varieties of the cactus family, which are much less efficient.

My experience leads me to believe that it is useful in palpitation of the heart, and in irregularity, whether from the abuse of tea or coffee or of alcohol; also when the irregular heart is associated with heart-strain or any other condition, including dyspnea, hysteria, and hypochondriasis, as well as all

emotional irregularities of the organ. It is sometimes beneficial in Graves's disease, when the heart is weak, irregular, and rapid. In functional troubles it is particularly useful; and in the disordered heart associated with and following influenza I have found it of great value, as well as in cardiac asthma. It gives aid and comfort to the aged who are suffering with disturbing circulatory symptoms, such as dyspnea, asthma, and a sensation of weakness in the organ. Given with nitroglycerin in such cases it adds much to the effectiveness of the latter. It is used with good effect in the convalescent stage of exhausting diseases, strengthening the weakened heart, the patient being often cognizant of the great comfort afforded.

When properly administered it is a good remedy in irritable heart, even when associated with aneurism, when digitalis would do positive harm, as it moderately strengthens and slows the heart and seems to control its action. When there is an excited and bounding pulse sometimes this drug soothes and quiets it, by apparently lowering the cardiac tension. Many patients after using this drug say: "My heart now feels comfortable."

Dr. Finley Ellingwood, of Chicago (*Medical Record*, 1905, vol. lxvii), says: "In its administration a small dose will accomplish all the desired results; and observers unite in the statement that large doses are in no way better than those of from two to five minims of the fluid extract." He also states, in the same article, that "cactus improves the nutrition of the heart. It improves the contractile power and energy of that organ, elevates arterial tension, and increases the height and force of the pulse-wave." He further says that it relieves the asthma, and he especially recommends it in atonicity alone—not for exaltation of that organ. He also uses it in excitement of the heart with a feeble pulse. Professor Ellingwood further says that no combination will take its place.

Potter reports that this drug was studied physiologically by Myers, who found that it possessed a decidedly stimulant action on the heart, the arterial tension, and the spinal motor centers.

Engstad (THERAPEUTIC GAZETTE, Sep-

the unpleasant symptoms such as we often find in the nervously diseased heart. In any case it may subdue the discomfort and sometimes permanently relieve the pain in the region of the heart.

3. It is a valuable adjunct to the other well-known heart remedies, by steadying the heart and aiding its tone, helping to support the weakened organ. I want to emphasize one important point: remember that it is not a strong cardiac tonic or stimulant, therefore it should not be alone depended upon in a seriously diseased heart.

4. Those who expect it to take the place of digitalis do not, in my estimation, know the action of the two drugs, as they are essentially different in their action. Furthermore, cactus is in a class by itself, not being like any other heart remedy.

After reading the foregoing paper I received the following letter from Dr. R. W. Wilcox, of New York City, which explains itself:

In connection with your paper on Cactus I would say that I have satisfactory evidence in my possession which shows that the investigator whom you quote as having found cactus absolutely inert by his experiments never even saw any cactus until after his report was published. Although his attention has been called to this fact, so far as I know he has never corrected his statement. If one cares to make use of a fluid extract of cactus such as may be obtained without difficulty in the pharmacies his sphygmograph will show (a) a more rapid pulse and (b) increased blood tension. This can be demonstrated without difficulty, and all laboratory experiments either ignorantly or purposely showing the opposite are only reflections upon the scientific honesty of the reporter. Clinical experience is the crucial test, and that is the final word.

Sincerely yours,
REYNOLD WEBB WILCOX.

A NEW METHOD OF CLOSING THE ABDOMINAL WOUND AFTER THE "GRID-IRON" OPERATION WITHOUT USING BURIED SUTURES, BY MEANS OF TWO CROSSED SUTURES OF SILKWORM-GUT.

BY GASTON TORRANCE, M.D.,

Surgeon to St. Vincent's and The Hillman Hospitals, Birmingham, Alabama.

In cases of low vitality we find that buried catgut sutures will often become infected, whereas in robust individuals this does not occur.

The following illustration shows a method of closing these wounds which I recently planned, to do away with the buried sutures:

The peritoneum is closed by a purse-string suture, turning all raw edges outward; the ends of this suture are left long after being tied, and are retied over the silkworm-gut sutures where they cross in the bottom of the wound.

Two strong silkworm-gut sutures are passed from within out, including the whole thickness of the abdominal wall down to the peritoneum. The first suture is passed so that it pierces the skin to the inner side and nearer the upper angle of the skin incision, being above the transverse division of the deep muscles; a needle is then threaded on the other end of this suture, and it is passed so as to emerge from the skin diagonally across the skin wound and nearer the lower angle and below the transverse division of the deep muscles.

The other suture is passed in the same way, and when both are tied they should cross near the center of the skin incision and crowd both layers of muscles toward this point, which is the weakest place in the wound.

Crossed suture used to close "gridiron" operation; no other sutures used. Photographed six days after operation.

This is also protected by the filigree formed by the crossing of the sutures and the peritoneal plug which is tied to the silkworm-gut sutures at this point.

I tie these sutures over a small roll of gauze, which can be removed in case they should be tied too tight.

In the case photographed I used a Mechel clip at either end of the wound to close the skin wound.

This method closes all dead spaces, does away with buried sutures, and gives a firmer and stronger approximation of the wound than any other method I have used.

UNTOWARD EFFECTS FOLLOWING THE USE OF MARAGLIANO'S SERUM.¹

BY H. R. M. LANDIS, M.D., PHILADELPHIA, PA.,

Visiting Physician to Tuberculosis Department, Philadelphia General Hospital, to the White Haven Sanatorium, and to the Phipps Institute; Demonstrator of Medicine, Jefferson Medical College.

Within the past year instances of serious untoward effects following the use of diphtheria antitoxin have been quite numerous, and while recovery has been the rule a few have ended fatally. In any event the symptoms of anaphylaxis or proteid hypersusceptibility are most alarming to both patient and physician.

These untoward effects are at present but ill understood as they occur in man, although the phenomena following the injection of serum into animals have been carefully studied and described by Otto and by Rosenau and Anderson.

The minor manifestations of serum intolerance (skin eruptions, edema, joint pains) have been fully described by Von Pirquet and Schick, and have been called by them "serum disease."

It has been shown that if a guinea-pig be injected with a single dose of horse serum, even in large quantities, no ill effects occur. If, however, after an interval of some days the animal is reinjected with serum, death almost always ensues. This hypersusceptibility to serum has been noted after an initial dose so infinitesimal as 1-1,000,000 Cc. Furthermore an animal once sensitized apparently retains this hypersusceptibility throughout its life, and in the case of the female may transmit it to her offspring.

Immunity to this hypersusceptibility may be obtained in one of two ways: first, by repeated injections of the serum during the period of incubation—that is, during the

first ten days; or secondly, by recovery from a second injection during the anaphylactic stage (Rosenau and Anderson).

In regard to the less serious evidences of hypersusceptibility—the "serum disease"—Von Pirquet and Schick have shown that there is in man a normal period of incubation for the appearance of these phenomena, namely, eight to thirteen days. This first injection, however, renders the individual sensitive to future injections, so that if a second injection is given from fourteen days to four months after the first one the evidences of serum disease occur almost at once, or at least within twenty-four hours. This they term the "immediate reaction." If the second injection is given after an interval of four months the reaction, while delayed from five to eight days, occurs earlier than the normal interval following the first injection—i.e., eight to thirteen days. This they term the "accelerated reaction."

Thus while man reacts to an initial dose of the serum and the guinea-pig rarely does, they both react to a second injection, although this reaction to the second dose differs in severity and kind.

These briefly stated facts are the essential features of proteid hypersusceptibility as they occur in man and the guinea-pig, and are important to bear in mind in analyzing the phenomena as seen in man following the use of Maragliano's serum.

It may be stated at this point that the following facts were submitted to Drs. Rosenau and Anderson, and that while both

¹Read at the International Congress on Tuberculosis, Washington, Sept. 30, 1908.

of them unhesitatingly subscribe to the view that the symptoms described undoubtedly come within the category of anaphylaxis they are unable to account for them. They state, however, that there are curious differences between man and the guinea-pig concerning modes of sensitization. The present interest in anaphylaxis seems to warrant reporting these facts, which are hereby submitted without any attempt toward explanation:

The use of Maragliano's serum was begun at the Phipps Institute in 1904. During this year but five cases were treated, the total number of injections given being 117. During the year 1905, 32 additional cases were treated; the total number of injections given to these 37 cases was 952. The details of four additional cases have been furnished to me by Drs. Trudeau and Ravenel; the number of injections given to these four cases was approximately 60, making the total number of injections for the 41 cases 1012. In addition 97 doses were administered to four patients by mouth. The dose by mouth was 2 Cc.; that by the hypodermic method from 1 to 3 Cc. The frequency of the injections varied. Cases treated in the hospital and in private practice were injected every other day, while the dispensary cases, numbering 19, received two injections a week. Of the 41 cases treated by injections, seven (17 per cent) had alarming untoward symptoms, although none ended fatally.

Of the seven cases with alarming symptoms, six presented nearly the same phenomena. Within a minute or two after the injection the patient's face became suffused and there was an expression of great anxiety. There was great difficulty in breathing and a sense of oppression, localized to a great extent over the precordium. The finger-tips became blue and the skin was covered with a clammy sweat. The pulse was very rapid (140 to 160) and almost imperceptible at the wrist. In three there was intense pain in the lumbar region; in one there was nausea and vomiting; and in one the patient screamed as the needle was withdrawn, became very pale, and had muscular tremors. In all there was a feel-

ing of impending death. In all the cases the phenomena passed off almost as rapidly as they began, and in a few moments the patients felt as well as ever. In one case the phenomena were atypical, and should perhaps be excluded. This patient became unconscious, had a feeble pulse and a sense of impending death two days after the sixth injection. Throughout the course of the treatment (27 injections) she was subject to these fainting attacks, although she had never had them before or after the treatment.

In four of the cases the evidences of hypersusceptibility occurred but once, following the third, tenth, twentieth, and twenty-second injection. In three the injections were continued without further trouble. In two cases the evidences of hypersusceptibility occurred after two successive injections (third and fourth and tenth and eleventh). In one the treatment was discontinued, and in the other the injections were continued without further trouble.

The injections in all these cases were made every other day as a rule. At times an interval of several days (later in the treatment) occurred owing to enlarged glands.

The earliest case to react was one on the sixth day after the third injection; the latest on the fiftieth day after the twenty-second injection.

A study of these cases shows that contrary to what one finds in guinea-pigs the evidences of hypersusceptibility were extremely variable in their appearance, developing as they did at irregular intervals after the treatment was instituted. Furthermore, the frequent injections within the first ten days did not develop an immunity, nor did recovery from an attack of anaphylaxis prevent future attacks in two instances.

A fact that may have some bearing on the frequency with which the untoward effects occurred is that all of the cases had advanced or moderately advanced disease. On the other hand the more favorable ambulant cases treated in the dispensary escaped the serious effects, but furnished four of the six instances of "serum disease."

Of the less serious manifestations of hypersusceptibility there were six instances in which the "serum disease" occurred. In three the eruption was urticarial; in three others the character of the eruption was not given. The eruption appeared after the fourth, fourth, sixth, sixth, tenth, and fifteenth injection respectively. In two the urticarial eruption was general; in one it was limited to the enlarged and painful joints; in three the distribution of the eruption was not given. One of the cases developing a rash and painful and enlarged joints (knees and elbows) after the fourth injection

had symptoms of marked hypersusceptibility after the twentieth injection.

Of the other phenomena noted in this series, herpes labialis occurred in one; and a herpetic eruption about the site of the injection in three.

There was a severe local inflammatory reaction at the site of the injection in seven. The adjacent glands became enlarged and painful in ten; in several cases the glands were so tender that the injections were stopped for four or five days. Severe joint pain was noted in three and lumbar pain in two.

A REVIEW OF RECENT KNOWLEDGE CONCERNING THE THERAPEUTIC ACTION OF MINERAL WATERS.

BY R. WEISS, PH.D., F.C.S., LONDON, ENGLAND.

It has been customary in scientific nomenclature to endow the word "therapeutics" with a twofold meaning, and consequently the wide realm of therapy is generally understood to comprise two main subdivisions. Into the first, termed drug therapy, is relegated all facts relating to the chemical action of drugs upon the body; and into the second, or physical therapy, those concerning the action upon the exterior of the body of certain forms of energy. But however consistently this subdivision may be adhered to in theory, it will be found to be inconvenient in actual practice in many instances; perhaps nowhere are inconsistencies so liable to occur as in the subject of the present paper. In the treatment of disease by mineral waters, both chemical and physical agencies are invoked, and while on mere superficial consideration we are prone to believe that we are dealing with chemical agencies only in the so-called "drink cures," we are constrained to include the physical element also when considering mineral water therapy as a whole.

That the definition "chemical" or "physical" as applied to "drink cures" or "bath cures" is not strictly speaking correct is disclosed by recent experiments, which have shown that absorption by the skin undoubtedly plays a definite rôle in so-

called "bath cures." Thus, a bath containing 12 per cent of sodium chloride is capable of causing an augmentation in the percentage of chlorine in the brain, liver, and spleen, and an increase of chlorides in the urine. These phenomena are to be explained only on the supposition that certain substances are capable of being absorbed by the skin. A still better example is offered by the "oxygen baths," which have lately been introduced. In these baths the liberated oxygen is supposed to produce its effect partly by its rubbing or massaging operation on the skin, and partly through the chemical combination of the gas with the red blood-corpuscles, when absorbed in the pores of the skin and in the lungs. But of far greater difficulty, and indeed of greater importance, is the subject of "drink cures," with which we are more especially concerned in the present paper. In their case we find that not only purely chemical processes but certain other agencies, chiefly physical, are at work upon the countless specialized cells of the body and have their part in the treatment. Justification for this statement is to be found in the practical experience of all medical men practicing at bath resorts or those conversant with the results obtained at these places, viz., that artificial mineral waters do not in any way

correspond, as far as their curative value is concerned, with those obtained from the natural sources.

The existence of certain coöperating psychological factors such as a complete submission to treatment on the part of the patient, due to local influences, the milder disturbance of diet, and above all the more complete removal from the cares of everyday life, do not suffice to explain the very striking discrepancy which exists between the activity of the artificial as against the natural waters.

This discrepancy is rendered all the more apparent by the fact that we are in a position to investigate chemically the composition of natural mineral waters with the utmost technical exactitude, and also so far synthetically to imitate them that the artificial product may be tried in practice and its therapeutic value determined and compared with the natural products. Here again the chemical composition of natural mineral waters as revealed by chemical analysis is insufficient to explain their therapeutic effects as compared with those of synthetic imitations. We are therefore driven to the conclusion that certain properties peculiar to the natural waters must be due to the presence of one or more of their constituents in some condition other than that in which they exist in the artificial waters. It is true that a certain discretionary margin underlies the analytical data derived from the chemical examination of mineral waters. For instance, it is by no means certain whether in a given water the analyst is dealing with a solution of sodium carbonate and potassium sulphate, or one of potassium carbonate and sodium sulphate. In obtaining analytical data of this kind, therefore, we are to a certain extent subservient to the arbitrary power of the chemist who compiles and expresses the results of his analysis to a certain extent aided by his discretion.

Moreover, at the present time, we are yet unable by any means known to chemical science to determine precisely the condition in which exist the salts dissolved in a mineral water of even average complexity. It is only quite recently that a much nearer approach has been made to the determination

of their true composition by the aid of not only chemical but also of chemico-physical procedures. By this step recognition is given to the view already emphasized, that in the discovery of the therapeutic possibilities of natural mineral waters we may be dealing not only with a chemical but also with a physical action. It is perchance in the latter, therefore, that the clue must be sought to the discovery of that elusive efficiency shown by the natural water as compared with the artificial.

The physical properties of fluids which we are now about to discuss were first definitely investigated and described by van't Hoff. He discovered that two solutions of different salts possess certain powers of attraction one to the other, to which the term "osmotic pressure" was applied. These powers vary in their intensity according to the solution employed. For instance, when a properly constituted membrane containing a 1-per-cent solution of calcium chloride is immersed in a solution of sodium chloride, water will pass out from within the membrane into the sodium chloride solution, which in course of time will become diluted to the strength required to bring the osmotic pressure conditions of the two solutions to the same level. In other words, they will become isotonic. An examination of the two solutions will show that these osmotic phenomena conform to certain fixed terms, and that they do not depend upon the mass of the dissolved salts but upon the atomic weights. Osmotic pressure is thus directly dependent upon the number of molecules present in the solution, and this number is the measure of the amount of osmosis which will take place. The gramme-molecule is the generally accepted unit for comparison, and it represents in grammes the sum of the atomic weights of the elements constituting the molecule of the dissolved substance. Thus, for instance, the gramme-molecule of sodium chloride is $\text{Na } 23 + \text{Cl } 35.5 = 58.5$. The fluid unit being one liter of water, the normal solution of sodium chloride for physico-chemical purposes would therefore be 58.5:1000 and the decinormal solution 5.85:1000.

In this connection also the atoms of the

respective molecules are considered to be made up of particles charged with positive or negative electricity, as the case may be, and these particles are termed "ions." The "ions" are regarded as being conductors of electricity.

When a substance such as sodium chloride is dissolved in water it undergoes disintegration into its component elements—in this case sodium and chloride. When Faraday's experiment is repeated by conducting an electric current through the solution, it will be found that the sodium atom is attracted to the negative pole or cathode and the chlorine atom to the positive pole or anode. Electrically speaking, therefore, sodium is a negative and chlorine a positive element.

Water as a solvent is immeasurably superior to all others. To this no less than to its many other valuable properties is to be ascribed the prominent position occupied by water in the household of Nature, and particularly in the human organism. Pure water may be regarded as a non-conductor of electricity. It has recently been shown from the work of Arrhenius, van't Hoff, Ostwald, Nerst, etc., that in a solution of inorganic salts consisting of anions and cations, even without the passage of an electric current there exists a more or less extensive freedom of movement among the ions and a perceptible electric current, and that therefore the union of ions to form salts is merely a dynamic process based upon the mutual attraction and repulsion of the ions. This physico-chemical process is termed "electrolytic disassociation," and upon it depend all chemical reactions, since not the molecular elements of compounds but the free ions react upon each other to form new combinations. The electrical conductivity of a solution is proportionate to the number of free ions it contains. By determining its conductivity, therefore, it is possible to obtain a definite value with which to represent the number of free ions in a solution, and with this also an accurate expression of the degree of disassociation of the molecule of the substance in solution. When this method is applied to the examination of mineral waters, their compound parts being considered as ions, we find that the

therapeutic action is unfortunately difficult of interpretation.

Let us now consider, as far as it is known, the mode of action of mineral waters, and review more particularly the relationship of osmotic pressure to therapeutic effect. For this purpose it is clear that chemically pure water must be our starting-point. The fact that water in a chemically pure state is a direct protoplasmic poison is widely known. The explanation is, of course, that water quickly passes into the cell bodies, and since the salts present in the cells cannot pass out with anything like the same rapidity there ensues a swelling of the cell bodies even to the point of bursting. This result depends upon a difference of osmotic pressure. It is also well known that the greater the degree of purity of the water the less becomes its conductivity and therewith the number of electrolytes present.

Our next step is to apply these considerations to the difference in osmotic pressure exercised respectively by saline solutions and the blood, employing the usual nomenclature of "hypertonic," "isotonic," and "hypotonic" to denote whether the osmotic pressure of the former is greater, equal to, or less than the latter. A convenient method whereby the osmotic pressure of fluids may be rapidly determined is by the observation of their freezing-point.

While pure water freezes at 0° C., ice only begins to be thrown out of saline solutions somewhere under that temperature. The temperature at which the first particle of ice separates out of a fluid is its freezing-point, and the difference between this point and zero gives the degree to which the freezing-point has been lowered by concentration of the fluid. This difference is a constant one for molecules of the same weight, and similarly to the osmotic pressure, it increases proportionately to the degree of concentration. Thus the determination of the freezing-point comes to afford a reliable means of arriving at the osmotic pressure of a fluid. Blood freezes at a point 0.56 of a degree below zero, and gastric juice .36 degrees below zero. It is found that fluids of greater concentration than the gastric juice are diluted in the stomach until

their freezing-point approaches that of the juice, and herein lies the clue to the solution of the questions as to the behavior of mineral waters in the stomach.

According to views which have resulted from recent work on the subject, the stomach is a secreting organ and is but ill provided for the work of absorption. Its function is to prepare ingested material for absorption by the bowel, not only chemically by means of its powerful digestive secretion, but also physically by the aid of the same secretion which brings the higher osmotic tension of the dissolved contents to the level of that of the blood. These fluid contents are rendered isotonic or even hypotonic, a result which is in no inconsiderable degree furthered by the active movements of the organ.

There are pathological conditions of the stomach in which clinical observation has discovered certain abnormalities of the normal tendency of the stomach to lower the osmotic pressure of its contents to the point of isotonism or hypotonism, and these abnormalities have a very important bearing upon the subject of mineral water "drink cures." A point of great significance, for instance, is the length of sojourn of the ingesta in the stomach, since hypertonic solutions remain longer than isotonic or hypotonic solutions. Thus, ferruginous waters which have a very low freezing-point disappear with extreme rapidity from the stomach. The same applies to table waters, hence their value as a means of correcting the very high osmotic pressure possessed by certain wines. Bitter mineral waters, on the other hand, have a very high osmotic pressure, and therefore remain long in the stomach.

It is thus evident that there lies embodied in the foregoing observations the rationale for the clinical experience that in diseases such as dilatation of the stomach, chronic gastritis, etc.—*i.e.*, diseases in which motor insufficiency is a prominent feature—the imbibition of large quantities of strong liquors or concentrated mineral waters is contraindicated, as such beverages are worse than useless for the purpose of diluting the ingesta and so reducing their osmotic pres-

sure. The correct view, with regard to the relationship of food to drink in these cases, would seem to be that a diminution in the work required of the stomach follows naturally upon the dilution of food of high molecular concentration by means of the simultaneous ingestion of fluid the molecular concentration of which is low; that in any case fluids of high osmotic pressure, such as strong alcoholic beverages, are harmful, as they are the means of attracting fluid from the wall of the stomach into its cavity, and in this manner interfere with digestion.

It therefore appears probable that the osmotic pressure of natural mineral waters, as revealed by the lowering of their freezing-point, is a physical consideration of some moment and has an important bearing upon their use, at least in some conditions. It is now necessary, however, to draw attention to another circumstance which has become notorious since the introduction of artificial waters. It is that from the water obtained from natural acidulous springs, used either for drinking or bathing, the carbonic acid gas escapes far more slowly than from the artificial waters. The explanation of this fact has given rise to various theories, the sum of which seems to be that CO_2 is contained or combined in the natural waters in some form other than that in which it is contained or combined in the artificial waters. What is believed to be the best hypothesis at present advanced in connection with this view is that there are in the natural waters, either dissolved or suspended, certain bodies which are capable of hypersaturating themselves with CO_2 . These are supposed to be garments or "catalisatories," which, although possessed of no intrinsic chemical properties themselves, are capable of materially assisting extrinsic chemical reactions occurring in the same solution. As an example of the occurrence of this phenomenon elsewhere in chemical science may be cited the well-known property of finely divided platinum in promoting the decomposition of hydrogen peroxide into water and oxygen. This reaction will take place with the presence of so small a quantity of platinum as one three-hundred-and-sixty-thousandth of a milligramme to

one cubic centimeter of hydrogen peroxide. The extraordinary infinitesimal proportions of this amount of platinum may be judged from the fact that such a dilution is twenty times weaker than the percentage of gold in the ocean. When catalytic bodies such as these are capable of exercising a distinctly perceptible effect when so enormously diluted there is good ground for the belief that their immense fund of energy may also be exercised in the direction of therapeutic action. We here arrive, however, upon a field which yet awaits investigation. A parallel instance is to be found in organic chemistry in the possible importance to be ascribed to the work of the so-called "enzymes" in plant life. Within recent years much has been done to elucidate the nature of these bodies by a comparison of syntheti-

cal processes with natural processes, especially those occurring in plants, and excellent results have been obtained with the very simplest means. In organic chemistry catalisatories are found represented by chlorophyll and the enzymes, by the agency of which sunlight is made the stimulus for the synthetic activity of plants.

The catalisatories of natural mineral waters correspond to these enzymes in plant life, and to them, as has already been shown, we ascribe to-day definite therapeutic effects.

However this may be, these bodies have still to be submitted to exhaustive study and accurate investigation before we can state positively that it is possible to produce artificial saline solutions which will possess in every respect the same therapeutic effects as those obtained from natural sources.

TREATMENT OF ACUTE INFECTIONS BY SODIUM NUCLEINATE.

BY DR. D. T. LAINÉ, HAVANA, CUBA.

In our opinion the use of *sodium nucleinate* in the treatment of acute infections will soon become more generalized, as the various reports now appearing in the foreign medical journals become more widely known. We have, in this substance, the most efficient means of provoking, within a few hours, an artificial hyperleucocytosis, especially of its polynuclear elements.

Accepting the theory of Metchnikoff, that the white cells are the only elements of the blood actively concerned in the defense of the body against the invasion of micro-organisms, both the surgeon and physician will find in this drug a valuable aid in overcoming acute infections.

At a given moment it is in our power, as it were, to call upon all the reserves of the body and hurl them against the invading foe. That this drug has passed the experimental stage, and, practically applied, has been life-saving in its effects, is not only borne out by the published reports of various observers in Europe during the past four years, but recently by the experience of several physicians in this city in a series of over twenty-five cases.

Since more carefully studying the effects

of artificial hyperleucocytosis in overcoming acute infections, we cannot fail to be impressed with the belief that the life-saving properties of normal salt solution, as universally used, lie as much on the fact of its producing an artificial leucocytosis as on its direct mechanical effect of filling up the depleted circulation.

Chantemesse and Kahn (*Bull. Acad. de Méd. de Paris*, June 11, 1907) recommended the use of sodium nucleinate in the prophylaxis and treatment of the peritoneal infections of typhoid fever.

Jean Lepine and Popoff reported their experience in treating thirty cases of insanity, and Stern his experience in several cases of syphilis.

Barbier and Leon recently published their conclusions, after treating two cases of infantile tuberculosis and one of serofibrinous pleurisy of tubercular origin, with injections of this substance.

They claim that the indications for its use are in acute affections or in the acute exacerbations of chronic conditions, but not in chronic diseases of slow and progressive evolution.

Jean Lepine in further experiments found

that the injections of 0.25 gm. or 0.30 gm. of sodium nucleinate produced at first a leucolysis, lasting about four hours; then a hyperleucocytosis, reaching its maximum in thirty hours, but sometimes within six or ten hours after the injection. The leucocytosis lasted from six to ten days. The increase in the white corpuscles was always very large, from 14,000 to 20,000 and even 34,000, and the polynuclears were always proportionately in large numbers, 80 per cent and even 89 per cent.

His conclusions, therefore, were that injections of 0.25 gm. or 0.30 gm. of sodium nucleinate produced at first a temporary leucolysis, then an enormous leucocytosis, especially of the polynuclear elements. What the effects of these injections are on the opsonins of the blood plasma is not mentioned, but it certainly offers a wide field for further investigation.

The very brief histories of the following ten cases may be of interest in drawing attention to the various conditions in which the drug has been used with apparent excellent results in both infections that have taken place and those expected to occur:

Case 1.—Physician, aged fifty-nine; acute perforating appendicitis; operation; fecal fistula; slow convalescence. About the twenty-eighth day, acute lymphangitis of left leg; high temperature; weak; rapid pulse and pain.

His attending physician, Dr. Cabrera, who was the first to use the drug in this city, gave him an injection of 0.30 gm. sodium nucleinate, followed in twelve hours by another 0.25 gm. There was an immediate drop in the temperature, rapid improvement in the general condition, and recovery.

Case 2.—F. S., child; periappendicular abscess; free pus in the abdominal cavity; postoperative infection; general peritonitis; jaundice; rapid, thready pulse; hopeless condition. On the second day following the operation 18 tubes, each containing 0.05 gm. of sodium nucleinate, were used (three injections of 0.30 gm. each during the twenty-four hours).

The fever and jaundice disappeared

within two days; general improvement and recovery.

Case 3.—A woman of forty-two with cancer of the uterus and rectum; 0.25 gm. injected before and after operation. Abdomen remained soft; temperature normal; pulse 90.

Case 4.—Mrs. E.; puerperal phlebitis; injection of 0.25 gm.; immediate disappearance of pain and fever; prompt recovery.

Case 5.—S. M., child, aged seven years; appendicitis; purulent peritonitis; condition very grave; injections of 0.25 gm. of sodium nucleinate two hours after operation; 0.30 gm. the following morning, and another of the same quantity in the evening.

Bowels moved spontaneously thirty-six hours after operation, following an intestinal paralysis of four days' duration; rapid convalescence; recovery.

Case 6.—R. V., child; gangrenous appendicitis; purulent peritonitis, general septicemia; operated upon at noon; injection of 0.25 gm. during the operation; 0.30 gm. the same evening; general condition very serious; temperature 106°; pulse 160; the patient was decidedly improved the following day; another 0.30 gm. during the twenty-four hours; rapid convalescence; recovery.

Case 7.—Miss X.; pyosalpinx, with a continuous daily rise of temperature during three months, accompanied by pain and nausea. Preliminary treatment for operation; three injections of 0.30 gm. during three consecutive days was followed by immediate disappearance of these symptoms.

Case 8.—Man, aged twenty-seven; abscess of the mouth, followed by general septicemia; daily rise of temperature fluctuating between 103° and 104°; night sweats; great emaciation; injections of 0.25 gm. of sodium nucleinate, followed by great improvement in symptoms; recovery.

Case 9.—Acute epiploitis or thrombosis of mesenteric veins following one month after an operation for direct inguinal hernia. Large intra-abdominal inflammatory mass; temperature of 104° and 105°; sixteen days dangerously ill, followed by immediate im-

provement and recovery after two injections of 0.25 grm. of sodium nucleinate.

Case 10.—Man, aged forty-seven; acute phlebitis of the right femoral vein; high temperatures lasting over two weeks, followed by a period of improvement. Sudden increase in the edema and intense pain over anterior crural nerve. This condition lasted ten days, the patient being kept constantly under the influence of morphine. One injection of 0.30 grm. of sodium nucleinate, followed in eight hours by another of 0.25 grm., gave immediate relief. In fact, during the rest of the convalescence, which lasted over four weeks, it was never necessary to give the patient another anodyne, and the edema rapidly disappeared.

I am indebted to Drs. Cabrera, E. Nuñez, and G. Mon for the report of the above cases, besides two of my own. The sodium nucleinate used is put up in sterile tubes, each containing 0.05 grm. of the salt. This substance is a combination of nucleinic acid, derived from fish or the flesh of animals (not yeast), with soda.

The best results have been obtained here with one or two massive doses 0.30 grm. once or twice a day. The injections must be given deep in the muscles, as the one objection to their use is that they are somewhat painful.

THE LOCAL TREATMENT OF ACUTE INFLAMMATIONS OF THE THROAT FROM THE STANDPOINT OF PATHOLOGY.

GOODALE in the *Boston Medical and Surgical Journal* of June 25, 1908, reaches the following conclusions:

1. In a beginning tonsillitis antiseptic applications may perhaps be used with benefit, and their effect, if any, will be to abort the local infection. If the disease is not checked at the outset by the sterilization of the parts, but if it proceeds to the formation of white spots in the crypts with systemic involvement, further application of antiseptics may not only be useless but harmful.

It would appear possible that antiseptics

may retard convalescence in two ways: first, by diminishing the number of bacteria in the crypts which are generating toxin, and consequently prolonging the period required for the formation of the requisite amount of antibodies; secondly, by their destructive action upon the tissue cells and phagocytic leucocytes of the host.

2. Forcible application of antiseptics may be followed by increased fever and cervical adenitis, indicating heightened absorption of toxin into the system. This phenomenon may be compared to the depression which follows the injection of too large a dose of vaccine in cases undergoing opsonic treatment.

3. In certain cases in which acute tonsillitis appears to be aborted by local antiseptics, inflammatory manifestations may follow after a day or two in the neighboring regions and last for a number of days or several weeks. Here the possibility is suggested that the checking of the tonsillitis checked also the establishment of immunity, and that for its final accomplishment a longer period of growth of the organism upon the membranes of the nose, larynx, trachea, or bronchi was necessary. In this connection we may recall the protracted duration of nasal diphtheria, as compared with the relatively brief time occupied by the pharyngeal disease.

In closing his paper, the author suggests that here is a fruitful field for further study. If the conclusions to which he has come prove, on fuller investigation, definitely established, we shall have to modify our time-honored treatment of these affections. The author ventures to prophesy our procedure will be approximately as follows: Active early local treatment as at present with guaiacum, silver preparations, etc.; the avoidance of antiseptics when once the disease is definitely under way; and, above all, complete local and general rest. It may be said with truth that the most vigorous and active measure that we can adopt in acute infections of the throat is a consignment of the patient to his bed with avoidance of meddlesome interference.

EDITORIAL.

FEEDING IN TYPHOID FEVER.

We believe that there are few subjects in clinical medicine at the present time which are of greater importance than the question of the proper feeding of patients suffering from typhoid fever. A large number of those physicians who are now in active practice were taught in their medical-school-days to rely entirely upon a milk or broth diet, and furthermore were warned that other forms of food were prone to produce disaster, with particular reference to intestinal hemorrhage and perforation. For more than ten years we have been convinced that the milk and broth diet for typhoid fever patients was entirely inadequate, and that a rigid adherence to it in the majority of instances distinctly decreased the patient's chances of recovery, and we have frequently, in lectures and in the pages of the THERAPEUTIC GAZETTE, urged the necessity of giving an adequate amount of foodstuffs to nearly all patients who were suffering from this disease. During this time a number of other physicians, notably Dr. Shattuck, of Boston, have published papers in which they have advocated a much more liberal diet than that which was customary fifteen years ago, and there is now at hand a mass of statistics which proves very conclusively that such an increased diet is in no way deleterious, but on the contrary is distinctly advantageous.

An exceedingly interesting and valuable communication upon this subject was read before the Section in Medicine of the American Medical Association at its recent meeting in Chicago by Dr. Shaffer, who, in a paper entitled "Metabolism in Typhoid Fever," adduces scientific facts, obtained in the laboratory as well as others obtained at the bedside, in support of the belief that a liberal diet is essential. After pointing out that a considerable part of the loss of weight in typhoid fever patients was due to a loss of water, he proceeds to show that there is a very great loss of body fat, a fact with

which we are all familiar, and an equally heavy loss of protein. Thus, he quotes a case reported by Lyman and Klemperer in which there was a loss of 7 pounds of pure muscle tissue in twelve days, and another recorded by Müller in which there was a loss of 5½ pounds of muscle tissue in eight days, and he does not think that these facts are unusual. Indeed, he believes that the equivalent of 1½ pounds of muscle tissue in a single day is not infrequently lost. The reason of this extraordinary loss of fat and protein is the cause of the emaciation and weakness so commonly seen toward the end of typhoid fever and in the stage of convalescence, and there seems to be little doubt that this loss of fat and protein is in direct ratio to the duration of the disease, a fact which one would naturally suppose to exist.

It is manifest that such extraordinary losses cannot but be injurious to the patient, but there are other facts of equal importance which are not so manifest, namely, as Shaffer points out, that the destruction of fat leads to acidosis with a loss of alkali from the tissues until a condition has been produced which is in one sense allied to that sometimes seen in severe cases of diabetes, and for this reason it is not rare for acetone to appear in the urine of typhoid fever patients in considerable quantity. In other words, a patient fed on a low diet during typhoid fever is really suffering from starvation acidosis, and if this be true it is evident that a low diet is distinctly disadvantageous. Furthermore, it is a well-recognized fact in the case of diabetics that the administration of a liberal carbohydrate diet with the object of protecting the body fats is absolutely essential wherever acetoneuria becomes marked. Again, it has been pointed out by Ewing in a paper which he read before the Pathological Society of Philadelphia several years ago that many of the symptoms of typhoid fever, in severe cases in which toxemia is marked, are probably due not alone to the poisons produced

by the invading microörganism, but to the autointoxication resulting from the burning of 30 pounds of body tissue in three weeks.

There are, therefore, three states from which the average typhoid fever patient who is fed upon a low diet suffers: First, the infection which produces the toxins; secondly, the combustion of his tissues with its attendant pyrexia; and thirdly, partial starvation, for as we have repeatedly pointed out in these pages, no less than five or six pints of excellent milk have to be ingested by the ordinary adult to provide him with the number of calories which are necessary for the maintenance of normal nutrition, and in the presence of fever an even greater quantity is needful. It is practically impossible for a patient to take as much liquid as this, and in the attempt to do so the stomach is overburdened and the kidneys are required to perform an excessive amount of work in the elimination of large quantities of liquid. This is even more true when broths are employed. It therefore cannot be denied that a patient upon a milk or broth diet is partially starved. Experiments without number have proved that animals and human beings suffering from partial or complete starvation are far more susceptible to the influence of pathogenic organisms than those which receive an adequate quantity of food, and this is still another reason for adequate feeding.

Scientifically and practically the next question which arises, and it is one which is well considered by Shaffer, is whether it is possible to devise a diet which will protect the proteins and fats of the body from excessive loss during the course of this disease. It has been found by a number of investigators experimenting with animals ill with other infections that a full carbohydrate or protein diet did materially protect the body tissues, and Shaffer and Coleman, studying this question in patients suffering from typhoid fever in the Bellevue Hospital, found that they were able to diminish the loss of body nitrogen very markedly by a proper carbohydrate diet to which was added a moderate amount of protein. The carbohydrates are given in far larger amounts than the proteins because it has been proved

by a host of investigators that they spare the body protein in health more than any other foodstuffs, and still other investigators have proved that this is true in fever. Fats cannot be given in large quantities because they are difficult of digestion and produce disagreeable symptoms.

It having been proved therefore, both theoretically and practically, that considerable quantities of carbohydrates are distinctly advantageous for typhoid fever patients, the next question which arises is whether there is any objection to the administration of this form of food in adequate quantities. It has been thought by some that the digestion is so impaired in typhoid fever that considerable quantities of food could not be taken, and undoubtedly in very severe cases feebleness of digestion is an important factor. But when one stops to think of the strain which is put upon the digestive apparatus by an attempt to give the patient an adequate quantity of milk, it is at once evident that the possibility of a feeble digestion must be considered as much in the case of a milk diet as in any other form of feeding. We have not infrequently seen in cases of typhoid fever which have come to autopsy a large number of undigested curds of milk throughout the intestine which without doubt have passed so far down this tube as to be useless and distinctly deleterious, producing tympanites and other disagreeable symptoms which were not attributed to the milk as they ought to have been. Recent experiments have also proved that the impairment of digestion in typhoid fever for ordinary foodstuffs is by no means as great as has been thought in the past, and this is particularly so in regard to carbohydrates, as has been proved by Folin.

Another reason for using carbohydrates freely in distinction from protein foods is that liberal proteid diets have been proved to distinctly increase heat production.

Finally, Shaffer points out that the average typhoid fever patient receives at present 50 per cent or less of his energy requirement, or, in other words, is half-starved, and he asks the pertinent question, if starvation is harmful in health why should it be beneficial in typhoid fever?

It is our own custom to administer carbohydrate foods in the form of well-cooked barley, rice, corn-starch, and wheat, deprived of course of all extraneous material, from the end of the first week on through typhoid fever, and in addition such quantities of milk as the patient may be able to take without disgust and discomfort. Not infrequently, indeed almost constantly, such patients also receive from one to four raw or very soft-boiled eggs in every twenty-four hours, each dose of starchy food being accompanied by one of pancreatin or taka-diastase, and each dose of proteid being accompanied by hydrochloric acid and pepsin to hurry digestion.

We have never been able to see that this liberal diet produced any deleterious effects whatever. On the contrary, it is our firm conviction, dependent upon years of observation and trial, that patients fed in this way during the course of typhoid fever have a shorter convalescence, and are in a much better state of nutrition at the end of their febrile process than patients who are fed with milk or broths. Broths, in our experience, have been singularly prone to produce tympanites and diarrhea, probably because they act as culture media for the growth of microorganisms.

Not only can these facts be stated, but it is also a fact, according to our observation, that many cases of typhoid fever, which have a tendency to prolongation of the febrile process at a time when a normal temperature would naturally be expected, are in reality suffering from a condition of starvation in which the host of microorganisms, other than the typhoid bacillus, actively multiply in the system, which is not sufficiently vitalized to overcome them. In other words, when frequent relapses occur and the temperature remains irritable, full feeding is often the speediest method of cure.

At the risk of dwelling too much upon one subject we have brought this matter to the attention of our readers once more because its great importance deserves our careful consideration.

ANOTHER METHOD OF PREVENTING POSTANESTHETIC VOMITING.

Any method which can be devised for the purpose of diminishing that most annoying postanesthetic symptom, vomiting, is one which will receive a cordial reception from the profession, since this condition is one of the most annoying with which physicians and surgeons have to deal. The frequency of its occurrence has been very materially diminished by the general recognition of the fact that heretofore far too much ether has been administered, and with the general employment of the so-called "drop method" of using ether, and again by the recognition of the fact that the patient should be anesthetized and not saturated with the drug. It has been thought by some, too, that the simultaneous administration of oxygen with the ether also diminishes the frequency of the occurrence of vomiting, but the exact value of oxygen gas for this purpose is still to be determined. Certainly less oxygen gas is used to prevent postanesthetic vomiting to-day than a few years ago when the method was first brought forward.

In a recent number of the *Centralblatt für Chirurgie* Ritter states that he has employed constriction of the neck after ether in over sixty cases with the object of producing congestion or hyperemia of the cerebrum, and he claims that not a single one of these sixty patients vomited after the operation. Immediately after the administration of ether he applies a band around the neck tight enough to impede circulation, but not so tight, of course, as to impede respiration. This is kept in place from half an hour to an hour. Ritter also states that when this procedure is carried out the patient emerges from the condition of anesthesia and unconsciousness much more rapidly than under ordinary circumstances.

We have not heard of the employment of this method to any extent as yet in this country, and its importance must be determined by further investigation. If the observations are correct the interesting question arises as to how the good effects are produced. One would suppose that such a constricting band would in-

terfere much more with the escape of venous blood laden with the anesthetic from the brain than with the entrance of fresh blood through the arteries, since the blood-pressure in the arteries is so much greater, their walls are much thicker, and they are more deeply situated. It is possible that certain conditions of irritability of the vomiting center may be produced by a postanesthetic edema of the medulla which this congestion in some way influences. The method is so simple and so strongly recommended by Ritter that it at least deserves a trial.

THE TOXICITY OF TOBACCO SMOKE.

Almost ever since the time when Sir Walter Raleigh introduced the smoking of tobacco into England the question as to the harmfulness of smoking has been debated by the laity and by medical men as well, and notwithstanding the fact that from time to time various writers, professional and otherwise, have published the most violent attacks upon the use of tobacco, it has been used more and more universally. The general consensus of opinion, like the general consensus of opinion concerning the use of alcohol, may be said to be that in moderation it is not harmful, and in many instances possibly beneficial. The question of what is moderation varies, of course, with each individual, and the amount of tobacco which is smoked by one may be actually poisonous when used in a similar quantity by another. There are certain conditions, of course, in which the toxicity or harmfulness of tobacco is materially increased. This is but another way of stating that moderation is a term which must not only be covered by the actual state of the individual but by his surroundings as well. Thus, it is a well-known fact to every one who uses tobacco that a far greater amount of it may be smoked in a day without deleterious effects if the patient is leading a vigorous outdoor life, and many persons who are able to smoke tobacco in any quantity with impunity when living out-of-doors find it essential to limit the quantity very materially when they lead an indoor, or sedentary, existence. So extraordinary is this difference in the same indi-

vidual under different conditions that it is recognized universally by the laity, and the question is often asked why this difference should exist, since it is difficult to conceive that an outdoor life can materially alter or influence the effect of nicotine upon the human body.

Although nicotine is, in concentrated form, one of the most powerful poisons, and although it is generally considered as being the chief factor in producing disagreeable symptoms following the use of tobacco, it has long been recognized by those who are well posted that the greater portion of nicotine is destroyed by the combustion processes when tobacco is smoked, and that comparatively small quantities of this active principle enter the body. On the other hand, it is well known that pyridine is taken into the body in tobacco smoke in considerable quantities, and that pyridine is an active agent. For many years it has also been recognized that tobacco smoke contains very considerable proportions of carbon monoxide, a gas which is universally recognized as being exceedingly poisonous, and one which readily combines with the hemoglobin of the blood, forming a compound which is not readily broken up, and thereby induces prolonged effects, much more prolonged than those which are caused by many other gases which enter the blood.

In a recent number of the London *Lancet* some interesting facts are presented in regard to this matter from which it would seem to be proved that many of the disagreeable symptoms produced by tobacco smoke are not due to any peculiar educts of the drug itself, but to the carbon monoxide gas which the user of the weed inhales or takes into his mouth. According to the *Lancet* it has been calculated that one ounce of tobacco, when smoked, gives as much as from one to four pints of carbon monoxide gas when used in the form of a cigarette, and that the same amount of tobacco when smoked in a pipe gives two and a half to five pints of the gas, seeming to indicate that tobacco is more injurious when a pipe is used than when in the much-maligned cigarette. The fact, however, that tobacco smoke from a pipe is rarely inhaled, and the

smoke from a cigarette is almost universally inhaled, explains the fact that cigarette smoking is more harmful than pipe smoking.

It is pointed out with exceptional clearness that the symptoms which often develop in those who use tobacco to excess consist in dizziness and shortness of breath on exertion, with more or less functional cardiac disturbance, and it is interesting to note that these symptoms are also produced by the inhalation of carbon monoxide. This is the more important when we recall the fact that so small a quantity as 0.17 per cent of the gas, when mixed with air, causes distress, that 0.2 per cent may be fatal to animals, and that 0.4 per cent almost invariably causes death. It is still more interesting to note that the presence of carbon monoxide is probably the explanation of the fact that those living an outdoor life and taking exercise can use such large quantities of tobacco with comparative impunity, since under these circumstances the interchange of air in the lungs is more complete at each respiration, and the whole process of aeration and oxidation goes on more rapidly in these persons. The presence of carbon monoxide gas is also the probable explanation of the fact that smoking in a badly ventilated room is exceedingly prone to produce dizziness and other disagreeable sensations. As is well known, these disagreeable symptoms are most apt to occur when tobacco is freely used in a smoking-car or other place where the ventilation is poor, in which the air is laden with the smoke given off from many pipes or cigarettes, and carbon monoxide and carbon dioxide from human and other sources are not rarely present in excess quantities. We have seen more than one case in which perfectly healthy individuals have suffered from various forms of cardiac distress, probably due to tobacco, after taking long journeys in smoking compartments in which the air was laden with tobacco smoke and the exhalations commonly given off by healthy lungs. It would seem necessary, therefore, to revise our opinion that nicotine is the chief factor in producing disagreeable effects when tobacco is smoked, and that to carbon monoxide gas

must be laid most of the symptoms which are so well known to habitual users of large quantities of this drug.

THE CURE OF THE AFTER-RESULTS OF PROSTATECTOMY.

To surgical attendants in large city hospitals, to which those poor in purse and bodily crippled are most likely to drift, it is well known that prostatectomy, at its best a life-saving and rejuvenating operation, is at its worst often followed by sequelæ more immediately crippling and intolerable than the symptoms for which the operation was originally undertaken. Of these the most harassing are perhaps incontinence of urine and urethrorectal fistula. For the relief of these conditions there has heretofore been proposed no systematized course of treatment which afforded a fair promise of cure. Alexander (*Annals of Surgery*, August, 1908) on the basis of a large experience in the Bellevue Hospital has devised a treatment for these unfortunates and has applied it with brilliant success. In some of his cases the non-obstructing part of the prostate only had been removed; these required a second prostatectomy. In other cases the anterior rectum had been torn, and they exhibited at the time of their admission to the hospital large urethrorectal fistulæ. The perineum in these latter cases was little more than scar tissue, owing to ineffectual attempts to repair the damage.

The principle upon which Alexander based his treatment was to restore whenever necessary the perineum, the rectal wall, and the urethra to a condition as nearly approaching the normal as possible. Thereafter to teach the individual by exercise, to use what remained to him of the urogenital sphincter muscle, so that he might acquire voluntary control over the retention and expulsion of urine.

When the control of urination by voluntary effort is attained, automatic control will follow as a physiological necessity.

Any atonic or damaged muscle may be made to act, and the power of its action gradually be increased by proper exercises.

It is the method of application of these principles of physiology to the act of urination that constitutes the virtue of Alexander's treatment.

In regard to the closure of urethrorectal fistulæ, Alexander states that he has been able to close these fistulæ permanently by a single operation, and by methods which, while they require experience and careful nursing, can be successfully employed by any competent surgeon.

It is necessary, first, to determine whether all obstructing portions of the prostate, especially intravesical projections, have been removed and whether the bladder is free from calculi. When these conditions are present they should be removed, and the prostatic urethra and vesical orifice should be made even and smooth to the touch before an attempt is made to close the urethrorectal fistula. To close the fistula the patient is prepared by a few days' purgation with castor oil, and the bowel is washed out thoroughly at the time of operation.

With the patient in the lithotomy position, a curved incision is made in the perineum in front of the anus, extending from one tuberosity of the ischium to the other; the central portion of the perineum is divided, and the dissection is carried upward between the rectum and the prostate so as to expose the wall of the rectum externally for at least half an inch above the upper margin of the fistula.

This dissection is to an inexperienced surgeon difficult; for after the prostate has been removed the tissues are very thin between the rectum and the urethra. It will be found that more space in the perineal wound can be obtained by dividing the origin of the transversus perinei muscles from the ischium, or at least the more superficial part of these muscles.

The edges of the fistula should be separated from the urethra by cutting with a sharp knife and scissors and not by blunt dissection. The edges of the urethra at the seat of the fistula should be carefully refreshed by cutting away all overgrowing mucous membrane from the urethra, but the urethra should not be sutured.

The tissues about the fistulous opening in

the rectal wall are then refreshed with curved scissors and made smooth. All hemorrhage should be stopped and the wound made as dry as possible. The opening in the rectal wall is then closed by interrupted Lembert sutures of chromicized catgut placed from the perineal side by means of a round curved needle. These sutures should not include the mucous membrane of the bowel. One suture should be placed well above the upper margin of the opening and one well below the lower margin. It will be found convenient to introduce the sutures from below upward, and not to tie any suture until all have been placed.

After the opening into the rectum has been closed the bladder and bowel are to be irrigated by means of a metal tube. During this process the bowel should not be distended. No drainage-tube is put into the bladder.

To protect the line of suture in the rectal wall Alexander has devised the following expedient: A small triangle of gauze consisting of six or eight layers is made to fit the wound. The apex of this triangle is carried by forceps up to and behind the vesical orifice. Between the layers of gauze a 10-per-cent iodoform ointment, made with vaselin, is injected from a glass syringe, and the little pad is then plastered down so as to fit the posterior surface of the perineal wound accurately.

As the urine flows from the bladder over this pad it is shed off as is water from a duck's back.

The gauze is to be changed twice or three times a day, or oftener if the pad becomes displaced.

The external wound is then dressed by gauze pads to absorb the urine as it flows out of the wound.

The patient's bowels are usually confined by opium for one week. He is then given a dose of castor oil, and Alexander personally superintends the giving of the enema at the time of the first movement. On each day during the first week a metal tube is introduced into the rectum, and the lower bowel is washed out without distending it, after which one or two drachms of iodoform ointment is injected into the rectum. The peri-

neal wound is given the most careful attention during cicatrization so that it will fill in from the bottom without tension. Sounds are passed after the first ten days as they may be required to keep the urethra free from stricture and to make its walls smooth.

After restoration of the rectal wall and of the perineum these cases may be treated as those of incontinence not complicated by urethrorectal fistulæ. The inability to retain urine is manifested in the following ways: There may be what is practically if not literally a complete incontinence. The action of the urogenital sphincter seems to be abolished, and the urine dribbles from the penis almost as fast as it flows from the ureters into the bladder. The flow is usually intermittent, and corresponds to the intermittent flow from the ureters.

The bladder may be able to retain a small quantity of urine, but when this amount is exceeded there is leakage. The leakage may be intermittent, occurring at certain times during the day. There is often no leakage during sleep, nor for several hours after rising in the morning, but toward evening, when the patient becomes physically tired, there is more or less incontinence.

The patient may have perfect control while sitting or lying down, but when standing or walking there is involuntary leakage.

There may be leakage immediately after the urinary act, caused by retained urine in the urethra as the result of an atonic condition of the urethral walls.

These different degrees of disability are subject to infinite variation.

The effect of this inability to retain the urine, upon the minds of men naturally feeble, or made feeble by sickness and by disappointment, is often lamentable. And it is very necessary to arouse in the minds of these patients the hope that their disability is not a permanent one. The influence of suggestion here is undoubtedly great, and no time or pains should be spared to impress them with the reasonableness of a promise to cure them. This is essential, because without the hearty and intelligent coöperation of the individual patient a cure is impossible. On this account, and to accom-

plish the best results, Alexander has adopted the plan of treating several patients together in the hospital, so that those who are beginning to be taught to gain urinary control may be encouraged by those who have been taught, or who are at least further advanced toward a cure than they themselves are.

The method of instruction must vary with each case, but a general idea of the plan pursued in most cases may be given in outline.

The principle of treatment is to make the individual learn by practice to exercise voluntary control over what remains of the urogenital sphincter, thus to prevent the escape of urine. If this can be done, automatic control follows as a physiological necessity.

The difficulties to be overcome are greater than they might at first seem because in some of these cases there has been a very extensive destruction of the urogenital sphincter, by the improper performance of the prostatectomy. Yet even in the seemingly hopeless cases it is surprising to find how readily the parts remaining of this complex muscular mechanism may be trained to compensatory work.

The first step in accomplishing this result is to accustom the individual to moderate bladder distention. A catheter is introduced through the urethra and a warm saline solution is injected. The quantity injected should be just short of that sufficient to excite vesical contraction and a desire to pass urine. The catheter is then closed by the finger, and the individual is instructed and urged to exert himself to retain his urine; this is continued for several minutes; then continuing to urge the patient to "hold his water," the catheter is withdrawn. The fluid from the bladder is usually at first expelled, but the patient is urged during the entire time to prevent its escape.

This procedure is repeated several times and with varying quantities of fluid.

After a few days it will be found that the ability to retain some of the fluid injected is acquired. This fact should be pointed out to the patient and he should be encouraged in his efforts. He should be

instructed to make voluntary effort to control the escape of urine whenever he can.

After he has acquired the ability to control the injected fluid in the recumbent position, he is taught to control it when moving, when getting out of bed, when sitting down, and when performing certain mild calisthenic exercises, as raising first one foot, then the other foot; sitting down, and then arising. These actions are at first done with deliberation, then more rapidly.

In order to prevent leakage it is important to see that the urethra is completely emptied after each act of urination. In old men whose muscular structures are relaxed, or in whom the accelerator urinæ muscle has been injured, the urethra does not empty itself, and the presence of urine in the canal excites the contractility of the bladder and causes dribbling of urine. The patient is instructed to press upon the perineum with the fingers and to strip the urethra after each act of urination.

As soon as he has acquired any voluntary control, he should be instructed to urinate at frequent intervals, and each act of urination should consist of an exercise of interrupted urination, viz., to begin the act, to cut off the flow; to begin again, to control the flow.

At first all of these exercises must be done under supervision; and the rapidity with which the results are obtained will depend in a measure upon the intelligence of the individual and his coöperation in the treatment. An ignorant, discouraged, sulky old man is hard to teach; but it can be done if one gives the time and energy necessary.

Though this treatment may savor of psychotherapy, which doubtless it is, the results attained by it in cases heretofore regarded as incurable are convincing.

DIFFUSE PERITONITIS IN WOMEN.

Diffuse peritonitis, meaning by this term not necessarily an involvement of the entire peritoneal surface, but the presence of an infection free in the peritoneal cavity, is as it occurs clinically usually secondary to lesions of the appendix. Macdonald (*Surgery, Gynecology, and Obstetrics*, Septem-

ber, 1908) quotes a series of statistics to the effect that of 338 cases appendicitis was the cause in 218. Bowel ulcer was the causative factor in 140, gastric ulcer in 27, and infection of the gall-bladder in 8, whilst extension of infection in pelvic inflammatory disease caused peritonitis in 38 cases. In his own series of cases of diffuse peritonitis observed in women Macdonald notes a larger percentage of cases from pelvic causes and observes the frequency with which staphylococcic peritonitis is associated with endocarditis, quoting Otten to the effect that this complication develops in 25 per cent of cases, whilst in the streptococcic infection it develops in a trifle over 4 per cent. Moreover, in staphylococcic peritonitis metastatic abscess is the rule rather than the exception. *Bacillus coli* peritonitis is marked by a large amount of pus which has often a fetid odor. *Gonococcus* peritonitis is characterized by an increase in pulse-rate, more rapid than that noted in other forms of the infection.

As to pneumococcic peritonitis, Armand and Bowen's collection of 91 cases occurring in children is cited, these authors having noted that the pus is usually encysted and the peritoneal infection is secondary to some remote pneumococcal lesion. The characteristic of this form of infection is the plastic exudate, rich in fibrin, which causes adhesions and encapsulation. In the severe form the entire mass of intestines may adhere together and be surrounded by pus. The onset of acute peritonitis is soon followed by a chronic stage, with mild symptoms and indefinite masses on palpation. Though this infection might be suspected from the thin, odorless, greenish-yellow pus, the diagnosis must be based on bacteriological examination. The prognosis, though favorable, is only so providing the case be treated operatively.

Cummins is quoted to the effect that tuberculosis of the peritoneal cavity occurs in three per cent of all autopsies, and that of all forms of peritonitis 25 per cent are tuberculous. Genital tuberculosis is responsible for 40 per cent of the cases in females, and the average mortality is about three per cent. The primary focus of the disease is usually to be found; the peritoneal involvement is

greatest in extent near the seat of local infection. The fibrinous form of disease is said to give the greatest percentage of cure and the ulcerative the smallest.

Peritonitis incident to perforation may readily occur in the course of a tuberculous peritoneal process. It is characterized by an aggravation of the chronic condition, lack of harmony between pulse and temperature, slight meteorism, rigid abdomen, extension of the area of dullness, and vomiting. In this form of perforation operation is said to offer little hope, since the perforation cannot be found because of its small size and the fact that it is usually hidden by inflammatory exudate.

Peritonitis in the puerperium may be of lymphatic origin due to infection of the genital canal passing through the softened uterine and pelvic tissues and involving the peritoneum, usually streptococcic and severe, or to the lighting up of a previous focus of infection.

Getter has reported 21 cases in which in spite of normal labors infection of previously existing cyst had occurred and led to fatal peritonitis. Infection is usually due to the colon bacillus and is wide-spread and severe. In Patton's collection of 321 cases of ovarian cyst in pregnancy there were 95 cases treated expectantly until labor. Torsion of the pedicle occurred 29 times, 4 times during labor and 25 times during the puerperium. Rupture happened 13 times, 3 before and 10 after or during labor. There were 25 deaths in the 95 cases. The infection of ovarian cyst is especially liable to occur in the early puerperium. Appendicitis is also likely to cause extensive and fatal peritonitis in pregnancy.

As to the diagnosis of diffuse peritonitis in the early stage, Macdonald regards rigidity as the most diagnostic single symptom. After this follows pain, which he attributes mainly to the accompanying lymphangitis. Tenderness on palpation he states is not usually a marked symptom unless there has been some effort at repair. It is usually slight in puerperal diffuse peritonitis and marked in the less acute forms, as in the pneumococcic and gonococcic peritonitis. Vomiting is a constant symptom. Tempera-

ture is invariably high and pulse hurried. There is a diminution in red cells, which is more marked in puerperal peritonitis than in the non-pregnant. The leucocyte count is less in the pregnant than in the non-pregnant. Iodophilia is regarded as a useful sign and is considered as dependent upon the amount of toxemia, hence is of especial value in the profoundly toxic cases characterized by a low leucocyte count.

As to treatment, Macdonald observes that in women the cause of peritonitis being pelvic in half the cases, pelvic or vaginal operation can often eradicate the cause of the disease without disturbing the upper part of the abdominal cavity. In diffuse peritonitis of the lymphatic type associated with pregnancy, it is often impossible to eradicate any one focus of infection, and abdominal operation, beyond the relief of tension, gives but little help in the cure of the disease. He believes that this type of peritonitis is best treated by the expectant method, with abstinence from food or liquids, rectal feeding, and saline infusions by the bowel, until the condition becomes localized or cured.

Where a focus of infection such as a ruptured ovarian cyst or a pus tube can be removed it seems only reasonable to prevent the addition of infective material by its removal with as little operative trauma as possible.

The Fowler-Murphy method by elevation of the head and rectal infusions by the gravity bag are regarded as of major importance in treatment. The use of nucleinate of soda and nucleic acid as a means of increasing leucocytosis is commended.

The best that can be said for the polyvalent antistreptococcic serum is that its use does no harm and it should certainly be given a trial in all cases of streptococcus peritoneal infection.

From theoretical considerations staphylococcus vaccine is recommended in the more prolonged staphylococcus peritoneal infections.

Macdonald is in accord with the common practice of the day when he limits the operative treatment of diffuse peritonitis to the removal of the focus of the disease with as little trauma as possible.

REPORTS ON THERAPEUTIC PROGRESS.

MERCURY AND TUBERCULOSIS.

BERNART, writing in the *New York Medical Journal* of July 27, 1908, states there is little doubt that mercury administered so as to gain an intensive action without the production of toxic symptoms exerts a beneficial influence over some varieties of tuberculous infection; just what conditions are the most favorably influenced remain to be decided. It has been the practice of the author for some years to use mercury intravenously for the routine treatment of syphilis, so the author hopes he can add what he calls "a mite" to an interesting subject. A survey of his statistics some months ago (preparatory to the publishing of an article on syphilis, not tuberculosis) showed that he had treated 422 syphilitics by the intravenous method, and had given 9838 injections, of which 9446 were of mercuric chloride, 327 of mercuric cyanide, 32 of sublimine (ethylenediamine mercury sulphate), and 33 of mercuric iodide. The average dose of mercuric chloride was 0.02 gramme ($\frac{1}{3}$ grain).

Among the 327 patients treated with mercuric chloride were several with tuberculosis, from whom general observations were made. These observations at the time were not made for specific publication, as they apparently were foreign to his subject in view, but the topic of mercury in tuberculosis prompts this informal report.

Before citing the influence of mercury injections upon the tuberculous cases it might be of advantage to show that mercury, when given by injections, possesses certain actions exclusive of its antisyphilitic ones; this especially applies to the mercuric chloride. This drug when injected in full doses has a decided antithermic action in nearly all cases where the fever is the result of some germ invasion. Besides this, it also exerts what might be termed a sedative influence—that is, it decreases the nervous tension, or, as the patient expresses it, it

makes him lazy and indolent. This latter action might be the result of a mild metallic poisoning. In view of this it is not at all surprising that certain tuberculous patients at first seem to be favorably influenced by this method of treatment.

The general observations made on the syphilotuberculous patients of this series were as follows:

1. That the control of the active syphilis in many of the tuberculous patients seemed for the time to benefit the tuberculosis also.

2. That in patients with pulmonary tuberculosis, after the first control of the syphilis and if the treatment was continuously pushed, a few months would show a gradual aggravation of the tuberculosis.

3. That the genito-urinary tuberculous patients, outside of the benefit to their syphilis, showed no improvement in their tuberculosis.

4. That two patients with tuberculous eye trouble were benefited, one markedly so and the other but moderately so. This is not surprising, as the intravenous injections of mercuric chloride exert a decided and beneficial influence over infections and ulcerations of the eye.

5. That the patients with pulmonary tuberculosis, evidently suffering from the absorption of septic materials, probably due to a secondary germ infection, were decidedly benefited up to a certain point, after which, if the mercurial treatment was continued, their retrogression was rapid.

Regarding the sending of tuberculous patients, as suggested editorially, to the various spas, such as Hot Springs, Ark., for the reason that they can probably tolerate larger doses of mercury there than elsewhere, the author can only say that after five years of the general impression in vogue, and this impression undoubtedly emanated from experience that, so far as the tuberculosis is concerned, syphilotuberculous patients do not do well under the treatment

at that place. This impression may not be due to the use of mercury, but to the overdosing with the iodides, a habit nearly universally prevalent at the Springs.

THE OPSONIC TREATMENT OF DISEASE.

In the *New York Medical Journal* of June 27, 1908, ILLMAN and DUNCAN write on this topic. In their conclusions the authors state that vaccine therapy offers a chance of cure in many cases of disease heretofore regarded as incurable.

That in the large majority of cases stock vaccines are just as efficient as autogenous vaccines.

That cases can be treated with fewer actual index observations than was at first supposed.

That cases treated with the clinical phenomena alone as a guide should only be so treated by some one well versed in vaccine therapy, and then only after having been under previous observation for a period long enough to have determined "the phase" the patient is in.

That very small initial doses should be employed when the opsonic index has not been previously determined.

That the best results at the present time are obtained in tuberculous conditions and staphylococcic or streptococcic infections, as in acne, etc.

That to get the best results vaccine treatment must be instituted as soon as the diagnosis is made.

MERCURY AND ACUTE SYPHILITIC NEPHRITIS.

BALLAGI in the *New York Medical Journal* of June 27, 1908, says, concerning mercury, that he does not think its action on the kidneys is sufficiently cleared up. Mercurial poisoning (stomatitis) is a very common occurrence, so we ought to see more of its effects on the kidneys. But cases of mercurial nephritis are so rare as to be worth publishing. Wilson reports a case ending fatally after administering eighty-four grains of calomel in fourteen

days. But his case is not instructive, the dose of mercury being far over the limit. Almost any kidney would be deranged when the patient was taking such enormous doses of any active drug. Further, Wilson's patient was suffering with pericarditis and insufficiency of the mitral, aortic, and tricuspid valves, consequently with a very much impeded circulation and metabolism. Wilson's other cited cases would weigh more, too, if they were not examples of exceptional idiosyncrasy against mercury. What we need to know is whether regular doses of mercury are capable of exciting albuminuria or nephritis. As to the experience of the author with syphilitic patients, he never has had occasion to restrict or stop mercury on account of urinary troubles. Maybe some of his patients did have a slight albuminuria in the course of the disease, but the every-day general practice is not the field where such cases can be easily detected if not accompanied by some special complaint or symptom.

The closing remarks made by Wilson, the author partly concurs with. The first one is a good suggestion—that in every case in which mercury is to be administered for a longer period a careful urinalysis should be made. But when nephritis complicates an existing syphilis he is of a different opinion. He would "except those cases in which it is possible to trace the renal disability to a syphilitic infection." Then the author thinks that no one needs to be afraid to employ an energetic antisiphilitic cure with mercury, supposing that is otherwise indicated, too. What a good dose of mercury can do, the case the author reports clearly shows.

Much depends on the mode of administering and the preparations used. Internal administration and inunctions are more dangerous. Wilson and Heller prefer the injection of soluble salts, particularly the bichloride. So does the writer. The insoluble preparations—metallic mercury, mercury salicylate, calomel, etc.—are either too slow or their effect is cumulative. Gottheil sets off as a great advantage of the insoluble salts the following: "By the injection of a dose of the insoluble compounds a medicinal depot, as it were, is established into

the tissues." This sounds well, but is rather a disadvantage. We do not give drugs to remain in the body an incalculable and unlimited period. On the contrary, medicines, after having developed their specific action on the tissues, are expected to leave the organism—the sooner the better. Welander, of Stockholm, calls special attention to the danger of producing "depots" by injecting insoluble mercury in the tissues, and relates several cases from his practice with very bad complications. He admits the relative harmlessness of the salicylate, on account of its earlier elimination.

The author warns everybody against the injection of calomel or gray oil. In a paper read before the Homestead Branch of the Allegheny County Medical Society in January, 1906, he reported a case from his own practice of a young woman who had eight such "medicinal depots" of calomel in her body. They did not trouble her until after the eighth injection, but then, all of a sudden, such toxic symptoms developed that all these depots had to be surgically removed to save her life. Fortunately, the injections were made in the muscles of the back. Since that time (it happened in 1894) the author has never used calomel for injections. With the corrosive (five-per-cent solution) the author never had any unpleasant experience.

THE OPHTHALMIC REACTION IN THE DIAGNOSIS OF TUBERCULOUS CONDITIONS.

PELTON writing on this topic in the *New York Medical Journal* of June 27, 1908, reaches the following conclusions:

1. The ophthalmic test is an aid of some value in the diagnosis of tuberculous conditions of the lungs, but in many instances is unnecessary since the diagnosis may be assured by the examination of the sputum and by physical examination of the chest. However, in incipient cases with equivocal signs the test may be of distinct assistance provided its results can be relied upon. Whether reliance is to be placed upon it or not further study of the reaction will show.

2. In lupus vulgaris and tuberculides of

the type of necrotic granuloma (follicles) the ophthalmic reaction seems to afford a very material help in the diagnosis of the condition.

COMPOSITION OF LARGE CURDS IN INFANTS' STOOLS.

In the *Boston Medical and Surgical Journal* of June 11, 1908, TALBOT states large curds in infants' stools are composed of some proteid (probably casein or one of its derivatives), which on coagulating entangles the milk fat in its meshes. The amount of fat in the curds depends on the amount of fat in the milk, and as this fat increases it replaces the proteid in the curd. The presence of large curds, which has been taken by some investigators to indicate an increase of gastric HCl, can with as great probability be interpreted as indicating a lack of HCl.

THE TUBERCULIN INUNCTION.

MORO, of Munich, in the *New York Medical Journal* of June 27, 1908, describes his method as follows:

The writer rubs into the skin of the chest or abdomen, over an area of 4 cubic inches, a piece of the following ointment of the size of a pea for about half a minute, and permits the ointment to remain on the surface of the skin to spontaneously absorb. The effect of this inunction is observed on the following day or later. The ointment is prescribed thus:

Koch's old tuberculin, 5 Cc.;
Anhydrous wool-fat, 5 grammes.

The result is positive when small papules appear over the area of the inunction or in its immediate vicinity, and negative when the skin shows no changes of any kind. With the positive reaction one often observes only a few very pale papules. Occasionally the papules are very numerous and red, and only exceptionally the skin in the region of the inunction is very much reddened and itches. The papules usually disappear at the end of a week. Other local or general symptoms have not been observed.

A positive result obtained by this method

is as conclusive for a present or previous tuberculous infection as is that obtained by the conjunctival reaction or cutaneous methods of von Pirquet.

By comparing the effects of the author's method and that of von Pirquet upon a large number of patients, the following differences were seen: (1) In advanced cases of tuberculosis the skin loses earlier its reactionary power to the inunction. (2) in cases showing no clinical signs of tuberculosis the percentage of positive results is much smaller in the inunction method.

As opposed to the conjunctival and subcutaneous applications the inunction is entirely harmless. The patients never object to its use.

The author's investigations have been only upon children. In the Munich medical clinics of Prof. Friedrich von Müller and Prof. Josef von Bauer, however, the efficiency of his method has been proved on adults.

PROPHYLACTIC INJECTIONS OF DEAD STREPTOCOCCI IN SCARLET FEVER.

The *Medical Record* of June 27, 1908, calls attention in an editorial to this topic. It begins by stating that of all European countries Russia shows the greatest morbidity as well as mortality from scarlet fever, and it is perhaps this fact that has led the Russian physicians to special activity in devising methods to fight the frightful epidemics that often take place in the villages. The results of their efforts have remained for the most part unknown to the American profession, being published chiefly in the Russian journals, yet they have been striking enough in recent years to deserve attention of the entire medical profession. Some years ago Gabritchevsky began to use injections of dead streptococci in the treatment and prevention of the disease, sharing the view of those who saw in that organism the specific cause of the disease. This view was strengthened in his mind by the similarity of the symptoms of the disease in human beings with those of an infectious adenitis of horses caused by the streptococcus.

Accordingly, Gabritchevsky isolated a streptococcus from the heart blood of children dying of scarlatina and then grew it on the usual artificial media. The first experiments with the dead cultures were made by him on himself and on his children, and after these proved to him the harmlessness of the procedure he supplied the vaccines in large quantities to the Russian profession. From that time till April, 1908, 37,000 persons have been treated in accordance with his ideas, over 50,000 injections having been made, for it was soon seen that repeated treatment was much better than a single injection of the dead bacilli. The injection is usually followed by redness, a slight rash, and some swelling at the site of the puncture; the regional lymph nodes often become swollen and painful; the temperature is slightly elevated; the child becomes irritable, weak, and loses its appetite; but all these symptoms disappear in a few days.

The preventive value of the injections may be judged by some instances quoted in an article by Danilow in *Russkii Vrach* of May 17, 1908. In two villages where scarlet fever appeared all the children were immediately vaccinated. In the first village no more cases of the disease occurred among children, but two unvaccinated adults were infected; in the second village the vaccinated children remained healthy, but a boy who came from another place on a visit was taken with the fever. Dreyling tells of vaccinating six children of a peasant's family, the seventh, a little girl, having hidden herself to escape the injection. Four days later she developed scarlet fever. Another unvaccinated child was admitted to the hospital together with an elder sister who was to act as nurse; she had been vaccinated and remained free of the disease, though constantly in the scarlatina ward. In another family the elder children were vaccinated, but the parents refused to permit the treatment for themselves and for two babies. In a few days three of the unvaccinated adults came down with the disease; then the youngest children were vaccinated and remained healthy. The general effects

of the vaccinations are best seen in the figures of morbidity given by Danilow. Only 1.1 per cent of all the vaccinated persons were taken sick with scarlet fever; of those vaccinated once 1.21 per cent were later attacked by the disease, 0.73 per cent of those vaccinated twice, and 1.09 per cent of those vaccinated three times being affected. The total mortality from scarlet fever of the vaccinated persons was but 0.123 per cent; the mortality of those who became sick without the prophylactic injections was 11.1 per cent. During the epidemics many cases of course must have been injected while in the incubation period of the disease, and cannot therefore be used to calculate the prophylactic effect of the treatment.

The above results obtained in the last two and a half years deserve attention from the physicians of other lands as well as of Russia. Since the ravages of diphtheria have been successfully diminished by the antitoxin treatment, scarlet fever has remained the one great disease of childhood, dangerous in itself and bringing with it a host of complications that may kill the child soon after the original disease, or make him a weakling or an invalid throughout life. Gabritchevsky's method should certainly be tried wherever possible so that its value in the treatment and prophylaxis of scarlet fever may soon be determined.

ANTEPARTUM AND POSTPARTUM HEMORRHAGE.

BARRINGTON in the *Australasian Medical Gazette* of June 20, 1908, states that immediate treatment in the main is directed toward restoration of the suspended activity of the uterine muscle, in order to insure its continuous contraction. For success it is essential in the majority of cases to plan a definite course of action and to know the successive steps thoroughly. The plan must be methodical, and implies that the failure of each reliable measure in turn requires promptly the adoption of a subsequent more serious maneuver. Such a plan is as follows:

1. Manipulation of the uterus per abdo-

men. If the hemorrhage starts after the birth of the child and is not checked by massage of the fundus, ascertain if the placenta is in the uterus or vagina. If in the uterus, try fuller massage for a short time. If this does not check the bleeding, or if the placenta is in the vagina, resort to manual expression of the placenta by Credé's method, if possible, and then stimulate the fundus by friction and compression with both hands. If the placenta cannot be expressed,

2. Clear out the uterus. Place the patient in the cross-bed position, pass a catheter, remove the whole placenta and membranes by the gloved right hand, working in conjunction with the left hand on the abdomen. Then give a hot intra-uterine douche of lysol (1 drachm to the quart) and administer ergotin hypodermically. These measures suffice for all but the most serious cases. If the placenta has been previously expressed and bleeding persists, do not waste time by douching out the uterus, but immediately adopt

3. Bimanual compression of the uterus, it being now evident that evacuation of the uterine cavity fails to induce proper retraction, and the inertia is intractable. Compress the fundus firmly between the closed right hand in the vagina and the other on the abdominal wall, and keep up firm compression until the contraction of the uterine muscle is well maintained for some time, to enable the organ to recover its tone. A hot intra-uterine douche may then be given. Direct pressure on the bleeding organ and the placental site must control the hemorrhage from the utero-placental vessels. There is no case of placental site hemorrhage which cannot at once be completely controlled by bimanual compression provided the uterus has been previously emptied of its contained blood-clots and placental fragments by the hand.

4. Tamponade of the uterine cavity with iodoform gauze. Being satisfied that the uterus is completely emptied, pass a posterior speculum, and pull the uterus well down after seizing the anterior and posterior lips of the cervix with bullet-forceps; support the outside of the uterus with the

left hand, and rapidly pass the gauze with the hand or long forceps in such a manner as to tightly pack the whole uterus and the vagina down to the vulva. The gauze is to be removed in from twelve to twenty-four hours, and an antiseptic intra-uterine douche given.

It is hardly necessary to add that the most rigorous aseptic technique must be observed in all intra-uterine manipulations, which can be very materially aided by a rubber-gloved right hand.

The last step in all cases is external tamponing of the uterus. Place pads or towels on the abdominal wall above the fundus and apply firmly the binder, which should always be ready before labor.

Finally, in regard to placental site hemorrhage, it must be clearly understood that while a systematic method is advocated in the majority of cases, it is impossible to follow a stereotyped plan in all cases. Special cases, and these the minority, need special treatment. In cases of great urgency, therefore, lose no time, but use at once a method that will immediately stop the hemorrhage—*e.g.*, immediate and complete evacuation of the secundines promptly followed by bimanual compression of the uterus.

Treatment of Traumatic Postpartum Hemorrhage.—If the hemorrhage is continuous, and continues in spite of a completely emptied and well-contracted uterus, it must be traumatic and may originate in the neighborhood of the clitoris, but usually from deep lateral tears of the perineum or laceration of the cervix, which may extend to the vaginal roof. Catgut sutures deeply passed by a curved needle and tightly tied will completely control the hemorrhage.

Restorative Treatment in Posthemorrhagic Collapse.—The hemorrhage, whether ante- or postpartum, having been controlled, it is imperative to counteract the effect of the severe blood loss and the resultant collapse. The indications for treatment are threefold:

1. To stimulate the heart, alcohol by mouth, strychnine hypodermically, coffee and brandy enemata.

2. To keep the blood in the important

organs—*i.e.*, the brain and viscera—by raising the foot of the bed.

3. To increase the amount of fluids in the blood-vessels: by giving plenty of diluent drinks by the mouth, by administration of normal saline enemata, and by the infusion of sterilized saline solution into a vein or into the loose cellular tissue of the axilla. In really bad cases—*i.e.*, when the patient is cold, blanched, with a feeble, almost uncountable pulse—her interests will be best served by immediately infusing warm normal saline solution into the median basilic vein, the fluid being slowly run in at a foot elevation, until two or three pints have been given. In addition, the patient must be allowed the greatest possible amount of fresh air by opening all the windows, and kept warm with hot guarded bottles and overspread blankets. The obstetrician will need to stay for some time by the patient until the fear of renewed hemorrhage or secondary collapse is past.

Finally, seeing that postpartum hemorrhage may occur without warning in any case of labor, the obstetrical outfit should contain a posterior speculum (preferably weighted), a strong volsellum, speculum forceps, needles and needle holder, iodoform gauze for uterine tamponade, an infusion needle, and the apparatus necessary for venous infusion.

THE X-RAY TREATMENT OF EXOPHTHALMIC GOITRE.

In the *Liverpool Medico-Chirurgical Journal* for July, 1908, HOLLAND reports his experiences with this method as follows:

1. In nearly all the cases carefully noted there was an immediate drop in the pulse-rate following upon the first three or four exposures, and this in some of the cases was very noticeable. Further, the pulse-rate remained reduced.

2. The muscular tremors and general nervousness, also, almost always showed signs of improvement from the first, and continued to improve during the course of the treatment. In two of the cases the pulse became normal and the tremors, etc., quite disappeared.

3. The circumference of the neck, taken

over the most prominent part of the gland, in some cases diminished notably, whilst in others no diminution in size occurred. Perhaps what was more noticeable was that in cases in which the gland was tense and hard and in which there was throbbing, almost always, and after a few exposures, the gland became softer and less tense and the throbbing diminished.

4. The exophthalmos was not materially altered in any of the cases in which it was a marked feature. In two or three it was thought both by the writer and the patient's friends that there was some improvement, but at any rate it was small.

One danger must, the author thinks, be guarded against. In one case, when about 120 exposures of ten minutes each were given in one year, and where cure was reported, the patient was shown, and presented some symptoms suggestive of myxedema. A friend who has also treated a few cases has told him that one of his patients also developed this condition. Although myxedema can be comparatively easily dealt with, it is a question whether the patient would consider it a benefit to be cured of one disease and given another. In future cases the author would be inclined to treat only one side of the gland first.

The author states that he is certainly of the opinion that x -ray treatment is of value, and of course there is no reason why it should not be combined with the usual medicinal methods. Early cases will probably prove to be those which x -rays will influence most favorably. It is still one of the drawbacks of treatment by x -rays that most of the cases referred to his department have already run the gauntlet of all the other departments, and are, so to speak, sent to x -rays as a last resort, and perhaps also to be got rid of; and this will apply to a very large number of the patients suffering from all kinds of complaints on whom the x -rays are tried. The result of this is disappointment, and the x -rays get blamed for not accomplishing the impossible. Occasionally some brilliant result is brought about by x -ray treatment; but although this

is instructive the author believes it would be of more value to know the effect in earlier cases more likely to be amenable to treatment.

CHLORETONE.

In the *Revista de Medicina y Cirujía de la Habana* of August 25, 1908, Dr. VENTO of the Medical School of Havana contributes a paper upon this well-known drug, in which he reaches the following conclusions with reference to the treatment of epilepsy by chloretone:

1. Chloretone exerts a selective action over the excitomotor function, since it sometimes prevents, at others arrests, and then again at others it diminishes what might be called the expression of that functional disturbance, the convulsion.

2. It may be prescribed, like bromide of potassium, for nervous hyperexcitability.

3. Chloretone exerts a preventive influence over the epileptic attack.

4. From the experience gained thus far with this therapeutic agent the author cannot conclude that it has a curative effect.

In view of the results obtained, and with the confidence acquired through his experience with epileptics, he commenced to prescribe it in various mental pathological conditions, especially in acute mania, and generally in all those cases in which the cerebral excitomotor function is found altered.

On account of the difficulty in dissolving chloretone, he has always ordered chloretone in capsules; and where the patient has refused to take them, or where through maniacal excitement the patient destroys them and spits out the chloretone, it has been given in powder, suspended in hot water or milk (20 to 30 grammes of vehicle). He has never given chloretone hypodermically, but always by the mouth.

The daily amount prescribed has varied between 0.10 and 3.50 grammes. Usually, and when insomnia is the only trouble to contend with, the author prescribes 25 centigrammes in one capsule, and in epileptics as high as 35 centigrammes in a capsule at night on going to bed. It is in acute mania

and to combat excitability that he commences with a high dose, one gramme daily in three capsules, a dose which is increased up to 3.50 grammes. The difficulty to control agitation in maniacs is well known, as is also the resisting power they have to large doses of sedative medicines.

The general effects of chloretone are as follows: It produces a light sleep, we might call it physiological; the mental processes become slow, which explains why the drug does not cause dreams, much less nightmares. When its administration is prolonged through several consecutive days a condition of mental hebetude is observed, the patients exhibiting no desire to talk nor to move; they remain seated and quiet, sleeping frequently. When its administration is prolonged many days in doses higher than one gramme daily, the pulse becomes small and slow, respiration less frequent and of less extent, and temperature falls slightly; but in doses of 35 centigrammes the above is not observed, the action of chloretone being limited then to the production of sleep and diminution of the general excitability. In some cases the patients have complained of headache on awaking, but this is not the rule.

The digestive function at times suffers some alteration. The patients under treatment with high doses, and frequently with even smaller doses, lose appetite gradually until it becomes completely absent. The breath becomes fetid and constipation follows. All these disturbances disappear with the suspension of the use of the medicine.

Chloretone exerts no injurious action over the blood constituents. Vento has observed nothing abnormal after repeated analysis, not even in patients subjected to high doses during many consecutive days.

THE TREATMENT OF TRACHOMA.

In the course of an article on this subject in the *Practitioner* for August, 1908, ORMOND states that the most important consequences of trachoma are opacities of the cornea and cicatrization of the conjunctiva.

The former are unfortunately usually central, and greatly interfere with vision; they are also diffuse, and an iridectomy is seldom of any value. With regard to this point the experience of the author is that a careful inspection with a magnifying glass, the pupil being dilated, and a good light brought to bear on it, often reveals fine corneal opacities which to the naked eye are invisible; irregular refraction will also be visible with a retinoscopic mirror. The only cases in which an iridectomy is of real value are those in which the opacity has a distinct line of demarcation, the rest of the cornea being perfectly clear. In all other cases the "stop" action of the iris is so valuable that iridectomy cannot fail to aggravate the patient's condition. The opacities then must be attacked directly. In so far as the opacity is due to the presence of organized fibrous tissue, the result of ulceration of the cornea, the chances of improving the condition are small; but undoubtedly a certain amount of the opacity is due to inflammatory products which may be absorbed, and the best means for obtaining this result is to keep up a slight irritation of the eye by means of stimulating medicaments, such as sulphate of copper, sulphate of zinc, yellow oxide of mercury, dionin, etc.—the first two being best applied in the form of drops, 1 to 4 grains to the ounce, two or three times a day—the mercury as an ointment, and the dionin as drops of 5 to 10 or even 15 per cent applied once or twice a week. This latter drug, in these strengths, produces a marked edema of the conjunctival tissue, due to a dilatation of the lymphatics; by this means absorption is increased.

A method of treating dense opacities, by producing serious and violent inflammation by means of jequiritol, has been in vogue for years, but its efficacy is adversely criticized by some; undoubtedly fibrous tissue may undergo softening and absorption, as the result of the changes following acute inflammation, but the treatment may of course lead to serious results and should not be undertaken "unadvisedly, lightly, or wantonly." The author's experience is,

however, that in suitable cases it is distinctly useful.

Fibrolysin, which is a combination of thiosinamin and sodium salicylate, is reported to have been of value in softening scar tissue, by being injected into the gluteus muscle, but the writer has had no experience with it and others have reported its inutility.

A NOTE ON THE TREATMENT OF MUCOUS COLITIS.

RANSOME states in the *Liverpool Medico-Chirurgical Journal* for July that mucous colitis, for the purpose of this paper at least, is best considered as a clinical entity with the following characteristics:

1. The patient is of a hysterical or neurasthenic temperament.
2. There is a history of prolonged and obstinate constipation.
3. There are paroxysmal attacks of abdominal pain, followed or accompanied by the passage of mucus of varying appearance.
4. There are intervals, of varying extent, of apparent good health between the attacks.
5. The mucus is non-inflammatory—i.e., contains practically no cellular elements.
6. No cause for obstruction or inflammation can be found in connection with the bowel.

Treatment.—There are only two really distinct forms of treatment for this complaint which are worthy of consideration. These are Von Noorden's and the so-called Plombières or intestinal lavage system.

Von Noorden's treatment is essentially one of diet, but in place of the usual bland, unirritating diet with little residue, even now recommended by high authorities in the treatment of mucous colic, Von Noorden advocates a coarse laxative diet, leaving as large a residue as possible. He prevents the usual irritating effect of such a diet by adding to it large quantities of fat in various forms.

The most important element in his diet is cellulose, obtained from vegetables and the husks of various leguminous plants.

As Von Noorden says, the cellulose undergoes bacterial decomposition in the intestine, and so gradually that the binding together of the feces into solid hard lumps is prevented.

The author then gives the details of Von Noorden's treatment as he has carried it out in practice. To begin with, it must be borne in mind, first, that the subjects of mucous colitis are usually neurotic, and secondly, that the treatment is a "trying" one, especially at its commencement.

For these reasons it is better that the patient should be isolated in a nursing home with a firm but sympathetic nurse, and that the physician in charge should encourage perseverance and instil the patient's mind with confidence in the result of the treatment.

The treatment should be carried out in the same way, whether it is commenced during an acute paroxysmal attack or during an interval.

The patient should go to bed and stay there. A rubber hot-water bottle is to be placed on the abdomen whenever there is distention or pain, and at night an enema of six to ten ounces of olive oil at a temperature of 98° F. is given slowly from a douche-can with a long, soft-rubber nozzle (8 inches), preferably in the genupectoral position, or on the back with the hips raised.

A suppository of belladonna extract (gr. $\frac{1}{2}$) or of morphine, if the pain is severe, should be inserted, and the patient directed to retain the oil until morning.

It will probably be necessary to continue the oil injection and belladonna suppository for several days, but as soon as the bowels act naturally they are given up.

The author then gives a typical dietary which contains the essentials of the treatment, but in which modifications, especially in quantities, must, of course, be made to suit individual patients.

7 A.M.: $\frac{1}{2}$ pint milk-cream mixture.

8 A.M.: $\frac{1}{2}$ pint Kissingen water.

9 A.M.: $\frac{1}{2}$ pint cocoa with cream, 2 ounces; bread, 2 ounces; butter, marmalade.

10.30 A.M.: Massage.

11.30 A.M.: 12 ounces special soup; 3 ounces bread, 1 ounce butter; potatoes, green vegetables, baked apple, stewed pears, or boiled gooseberries; cream. Rest for two hours with hot bottle on abdomen.

4 P.M.: $\frac{1}{2}$ pint milk-cream mixture.

7 P.M.: Dinner, like lunch, but with 3 ounces bread and 2 ounces of butter.

9.30 P.M.: $\frac{1}{2}$ pint milk-cream mixture.

A description of certain items in this dietary may be found useful.

Milk-cream mixture: This consists of equal parts of milk and cream, and one teaspoonful of sugar of milk. The cream should contain 30 per cent of butter-fat, and nearly a pint should be taken in the twenty-four hours.

Kissingen water: This is used as a stomachic, not as an aperient.

Bread: This must be of the coarsest flour obtainable. The larger proportion of husk it contains the better. The usual brown bread sold as whole-meal bread is not sufficiently coarse.

Butter: The average total quantity should be $\frac{1}{2}$ pound a day; 5 or 6 ounces of this is taken with bread, the remainder being used with the vegetables.

Special vegetable soup: This the writer considers to be the most important item of the diet, and should be prepared carefully according to the following directions:

Preparation of vegetable pulp: Place a breakfast-cupful of lentils or dry peas in a pan in sufficient cold water to cover them, and allow them to soak all night. In the morning add a slice of fat bacon about 6 inches by 2 inches and $\frac{1}{4}$ inch thick, and boil for one hour. Put one teaspoonful of butter and one of flour into a small pan on the fire, add a teacupful of milk gradually, stirring all the time until well mixed. Then add a teaspoonful of cream and mix with the pulp.

To vary the flavor of the soup, a sufficient quantity of green peas, spinach, asparagus, or other green vegetable should be placed in cold water and boiled for half an hour, rubbed through a sieve, and added to the soup.

The soup should contain all the husks of

the peas or lentils, and should be more of the consistency of porridge than of soup.

Meat: This may be of any kind, but is more easily digested if prepared as follows: It is cut up finely with a sharp knife, and thoroughly pounded in a mortar while raw. It is then mixed with sufficient beaten-up white of egg and milk to make a thick cream, placed in a china cup, and boiled in a pan of water for three to five minutes, being well stirred during the process.

Vegetables: These should be of the coarse green varieties—cabbage, spinach, Brussels sprouts—well boiled and mashed with butter.

The massage is used mainly for two purposes:

1. During painful spasms of the colon, when very light massage of the abdomen, "effleurage," has a soothing effect, diminishing the pain.

2. Regular daily massage of the abdomen to improve the muscular tone of the bowel. To this may be added electrical treatment.

In addition, general massage is useful for promoting the general nutrition of the patient and for inducing sleep.

The result of this treatment is that after two or three days, during which there may be much painful flatulent distention of the bowels, a natural action of the bowels occurs—the feces being of a soft, buttery consistence, entirely different from the hard mass previously formed, and also different from the watery motions obtained by aperient medicines.

When a daily evacuation has been really established the patient may be allowed to get up for two hours daily and go for a walk or drive, but it is usually necessary to continue the treatment for at least six weeks. After this a gradual return may be made to more ordinary diet, but plenty of coarse bread, coarse vegetables, and fat should remain a constant constituent of the diet.

The author considers Von Noorden's treatment by diet to be the best, but if for any reason it cannot be properly carried out, there is no doubt that the Plombières

system of treatment is very useful. In cases in which the attacks of pain are very frequent and in which the patient would be unable to stand the first few days of the Von Noorden treatment, the Plombières "cure" may pave the way and enable the patient to undergo the more drastic treatment. It consists in the use of a particularly soft water for thorough lavage of the large bowel, for drinking purposes, and for external baths; the whole effect being soothing and palliative to the irritable, spasmodic bowel, as well as to the "nerves" of the patient.

A NOTE UPON BLACKWATER FEVER.

HARDY in the *Journal of the Royal Army Medical Corps* for August, 1908, gives his experience in the treatment of this affection.

Such was the unsatisfactory nature of the treatment in 1899 that Dr. H. Hearsey introduced a new line of treatment, which has proved so successful that the name blackwater fever has been robbed of many of its terrors; and this from the mental point of view, in a severe case, alone means a great deal in coping with it.

The treatment adopted is as follows: As soon as possible after the onset of the disease, calomel, with $\frac{1}{4}$ of a grain of morphine hypodermically to allay restlessness and vomiting, is given, the patient is wrapped in blankets, and hot-water bottles are put in the bed. An hourly dose of a mixture containing liq. hydrarg. perchlor. min. xxx, and sodæ bicarb. gr. x to a tablespoonful of water, is given for the first twenty-four hours, and every two hours subsequently, until the urine clears. No food is given for the first twenty-four hours unless there is an inclination for it on the patient's part and an absence of vomiting. The food which the author usually gives is: (1) Small quantities of milk and soda; (2) small quantities of freshly made chicken broth; (3) small quantities of white wine whey. Barley water is given *ad libitum*, and the patient encouraged to drink it. Acid drinks, such as lemonade, and champagne and hock, are absolutely prohibited. If alcohol is required toward the

latter part of the illness, brandy or whisky is the only form in which to exhibit it. Beef extracts and essences are also strictly forbidden, and no quinine is administered. Digitalis is given if necessary.

The author has discussed the treatment with a German military surgeon in German East Africa, who tells him that quinine is forbidden in these cases, and that they rely upon copious libations of toast water, with excellent results. Unfortunately, he could not obtain any statistics.

The results of this method of treatment have been surprising. The mortality at once fell, and Dr. Hearsey was able to report a series of twenty-one cases without a death. Good results have been obtained by other practitioners. Suppression of urine, at one time a fairly common termination, has become an extremely rare one, and the severe vomiting, which was one of the most distressing features of an attack, is not now often met with.

ON CERTAIN ADJUNCTS TO THE OPEN-AIR TREATMENT OF TUBERCULOSIS.

RANSOME in the *Liverpool Medico-Chirurgical Journal* for July, 1908, reminds us that in all cases of active tubercular disease, rest is one of the first measures to be prescribed. It has been abundantly proved that such a course contributes, first, to the gain of weight, and to an improved quality of the blood; secondly, to the continuous warmth of the body; thirdly, the reclining position gives more complete repose to the bony levers overlying the injured lung; and fourthly, it has an important influence upon the state of fever, and generally upon the other symptoms of the acute stages of the disease.

But, on the other hand, the treatment of chronic maladies by overmuch rest has its dangers as well as its advantages. It is well known that from lack of sufficient exercise most of the functions may deteriorate; muscles waste and pass into a state of fatty degeneration; nerves lose their sensitiveness; and some of the forces upon which we most rely to strengthen the body

may fail us in our need, especially the appetite and power of digestion.

Hence we must seek for some means of meeting these dangers, and Dr. Weir Mitchell has provided us with them, in cases of neurasthenia, by the systematic use of massage and galvanism, and we may add to these the use of inunction of animal fats.

In many cases in which a prolonged stay in bed has been necessary, these measures have proved to be of the greatest service, and the writer therefore regards them as most useful adjuncts to open-air treatment.

Blisters.—This heading seems rather to recall the days of our grandfathers, and may perhaps excite some derision on that account. "Counter-irritation," as it was called, was truly greatly in vogue in former times, and that it was used in the treatment of phthisis is well shown by the old doggerel rhyme:

If consumption cured can be,
Which is a mighty rarity,
These three things you must prepare:
Milk, "traumatics," and fresh air.

It is possible, however, that we may sometimes miss a good thing by too much contempt for that which is old, and the author is convinced that one of these things is the "flying blister" applied over the site of active disease.

Although we do not know how they act, these applications certainly often do good, and we may even be allowed to surmise that they attract to the focus of disease an army of phagocytes, which may perhaps destroy both specific organisms and their allies. Whatever the explanation, the writer asserts he can testify that he has often seen a sudden amelioration of the symptoms follow their use.

Antimicrobial Treatment.—Pure air and sunshine are the best antiseptics, and it has been usual, in most sanatoria, to limit the use of chemical antiseptics to the destruction of the sputum, or occasionally to the fumigation of certain of the rooms. Yet they have their uses in the actual treatment of the disease, especially in the form of applications to the larynx in tubercular infiltration of that organ. Witness the

success of insufflations of iodoform and of applications of guaiacol and menthol.

It is probable, moreover, that the excellent results of the administration of large doses of creosote, guaiacol, and their derivatives, which was so often carried out a few years ago, were due to the antiseptic power of these drugs of cleansing away all microbes from the intestinal canal.

Iodoform, again, probably for the same reason, has a distinct influence upon the gain of body weight in cases of phthisis, a fact which the author demonstrated in the *British Medical Journal* in January, 1883.

The action of yeast, administered hypodermically or by the mouth, is probably antimicrobial, and it has often been of great service, especially in mixed infections.

May we not also claim the administration of the new tuberculin (T. R.) as an antimicrobial means, seeing that it increases so much the resisting power of the organism, as shown by the opsonic index? None of these methods should be given up, though they should undoubtedly be used with discretion.

The Use of Drugs.—It is perhaps better to be skeptical as to drugs than to be too credulous as to their efficacy.

A NOTE ON THE TREATMENT OF HEMOPTYSIS BY AMYL NITRITE.

GRACE-CALVERT in the *Liverpool Medico-Chirurgical Journal* for July, 1908, says that the drug which seems to be most valuable in practically all cases of hemoptysis is nitrite of amyl. At first sight it seems to be the height of rashness to give a patient with a wounded and bleeding vessel a drug which acts powerfully as a dilator of vessels; but—even though its action be only transitory—it produces such an immediate fall in the general blood-pressure by dilatation of the vessels throughout the body that the pressure at the bleeding point is lowered and there is time for clotting to take place, and the bleeding usually ceases almost instantly. Even if the pulmonary vessels are dilated, the ill effects are more than counterbalanced by the fall in pressure; but Dr. Francis Hare, who first called

attention to the good results obtained by using nitrite of amyl in hemoptysis, quotes in an article in the first number of the *British Journal of Tuberculosis* experiments which seem to prove that it has a direct vasoconstrictor action on the vessels of the pulmonary periphery, in spite of a vasodilator action elsewhere. In a recent lecture on "Some Medical Hemorrhages" Dr. Leonard Williams stated that the only consequence of inhaling the nitrite is to induce a "wide-spread dilatation of the systemic vessels with a considerable and rapid fall of arterial pressure, but with no necessary or even probable consequential effect on the vessels in the pulmonary system;" and he therefore asserted that nitrite of amyl does no good in cases of hemoptysis due to rupture of a systemic vessel, and that as "the hemotypsis of phthisis may mean the rupture of a pulmonary or systemic vessel, the utility of the nitrite depends on which is affected."

Now, physiologically he is wrong, as Schäfer has shown that it is impossible to cause wide-spread dilatation of the systemic vessels without reducing the pressure in the pulmonary vascular system; and in the experiments that Francis Hare quotes it was found that, after the injection of one cubic centimeter of nitrite of amyl into the femoral vein of a curarized dog, the surface of the lung became bloodless and could be snipped with scissors without bleeding. Such an intense anemia of the lung could not be brought about by an action on the bronchial arteries alone.

Clinical records, too, are also against him, as in almost every one of over 170 published cases inhalations of nitrite of amyl have produced immediate cessation of the hemorrhage, and some at least of these cases must have been due to rupture of a pulmonic vessel.

Another good point in favor of nitrite of amyl is the fact that it does not interfere with coughing, and so does not prevent the patient from getting rid of the blood effused into the air-passages, and hence it materially lessens the risk of an extension of the disease or of septic trouble later.

The author has now treated about twenty-three attacks of hemoptysis with nitrite of amyl, and so far it has never failed him, even though some of the attacks have been very severe; and in practically all cases the bleeding has ceased at once, or else has been remarkably diminished directly after the inhalation of the drug.

DIAPHORESIS IN THE TREATMENT OF INTERNAL OCULAR AFFECTIONS.

In the course of an article upon this subject in the *Pennsylvania Medical Journal* for August, 1908, HANSELL states that the range of diseases in which treatment by active and continued diaphoresis is applicable is extensive. In his own experience he has found it to embrace inflammation of the sclerocornea, of the uveal coat, acute and chronic, of the chorioretina, and of the optic nerve. The treatment is not always successful, naturally, but he has never known it to be harmful. In some patients it has been tried as a last resort, and in all after the usual modes of treatment have been found useless. Its greatest value has been shown in chronic inflammation associated with exudation in large amount of the uveal coat, with secondary involvement of the tissues immediately adjacent. After the stage of atrophy and connective tissue change nothing may be hoped for. It is, however, not always wise to say positively from ophthalmoscopic findings that exudation has given place entirely to connective tissue, and only trial can determine whether treatment may be of avail. The etiology of the inflammations of the uveal coat seems to have little bearing on the result, provided a modification of the treatment is made in accordance with the underlying cause. Thus, in rheumatism the salicylates, and in syphilis mercury and iodide, are important adjuncts to the sweats, and in traumatic iridochoroiditis in non-syphilitic individuals the above and other remedies may be useful.

Diaphoresis may be induced and maintained without the use of jaborandi in any of its forms. The objection that jaborandi is dangerous, though its effects be carefully watched, so often heard, does not

apply in the sweating process as here described. The author has never seen any ill effect from the use of jaborandi, and would not hesitate to use it should occasion require, but in the past two or three years he has dispensed with it to his entire satisfaction. By means of the electric light, as suggested by Dr. Risley and as practiced in the Polyclinic Hospital, or by means of blankets and hot-water bottles, the sweating may be easily continued for one and a half or two hours. Formerly he inaugurated the sweating process by a hot bath of ten or twelve minutes in duration, the temperature of the water at 106° to 110°. In several instances the patients have been temporarily greatly weakened and have even lost consciousness for a few moments at the conclusion of the bath. In order to guard against this annoying complication, he has either preceded the bath by a hypodermic injection of strychnine or has dispensed with it altogether, thus eliminating one of the objectionable features of the treatment without detracting from its efficacy.

The method that he now practices is extremely simple. A rubber sheet covers the mattress on which the patient lies. He is enveloped in three thick blankets. On each side, extending from the feet to the shoulders and as close to the skin as the heat will permit, are placed receptacles filled with hot water. A cup of hot fluid, preferably tea, is drunk. The sweating should commence almost instantly, and by renewing the hot water may be continued for the desired time. A glass of ice water, one-half hour after the process has commenced, will serve to increase the sweating. A sense of discomfort and fulness in the head may be relieved by an ice-cap, which may be worn from the inception of the process. The duration of the sweating should not exceed one hour and a half; longer than this seems to enervate the patient and may detract from the value of the treatment. At its conclusion the body should be well dried and rubbed with alcohol. The discomfort, if any is felt, passes away and is succeeded by a feeling of rest and relaxa-

tion. The patient and the bed are supplied with dry clothing and remain inseparable for several hours. The most convenient hour for the bath is in the early afternoon, the patient remaining in bed until the next morning, when he may dress, and if the weather is propitious take exercise out-of-doors.

The method proposed by Dr. Risley also obviates the use of pilocarpine and the hot bath. Instead of hot-water bottles he induces a gradual increase of temperature by means of an electric bulb of 24 to 32 c. p., which is hung at the top wire of a cage enclosing the patient. Air is prevented from entering the cage by blankets or other covering, only the head of the patient being exposed. In hospital practice where there is frequent demand for the treatment the application is most useful. It is inexpensive and admirably adapted for the purpose.

PSYCHOTHERAPY: ITS SCOPE AND LIMITATIONS.

In the *Monthly Cyclopaedia and Medical Bulletin* for July, 1908, MILLS in discussing this theme points out that in eras of excitement and exploitation of special methods of treatment the community at large or even the profession is often carried beyond the confines of reason. It would be easy to recall many illustrations of this fact. The great but unrealized, or only partially realized, expectations which were evoked by such discoveries as the tubercle bacillus, diphtheric bacillus, and the x-ray may be recalled. Even the advent of single remedies has sometimes awakened anticipation so extraordinary as scarcely to be believed in later times after such remedies have taken their real place, often a most important one. These remarks apply to such drugs as the bromides and the petroleum products, or going much farther back, to mercury, the iodides, quinine, and opium. The thousand and one remedies which have come loudly heralded and have departed, leaving no trace except the memory of a dishonored language and of unbenefited patients, need no reference in this connection. The writer is speaking rather of

remedies and measures of real and permanent value.

Who does not recall the high hopes of the suffering and the unthinking which were awakened by the propaganda in favor of the remedial use of electricity—in the early days by the static machine, the galvanic pile, and the faradic coil in their then crude and clumsy forms, and in more recent times by the improved Franklinc machine with its accessory appliances, by the sinusoidal current or the currents of high tension or great frequency, by the electric vibrator, and all the rest? Who does not recall the joyful anticipations indulged in by the very sanguine, or the more or less feeble-minded, when suspension was announced as a cure for sclerosis, and the correction of eye-strain as the sovereign remedy for epilepsy, and everything else of a neurological character which could not be reached by any other therapeutic method? Indeed, some of our ophthalmological enthusiasts have gone so far as to find in the correction of the errors of refraction the panacea for the ills of every refractory organ, whether in the brain, the thorax, the abdomen, or the pelvis. In the medical world remedies and therapeutic measures become the rage, just as in other worlds horse shows and bridge, bicycles or automobiles, football or stock gambling, may become the rage. The rage subsiding, a sane residuum is left, whether in medicine or in the lay world outside of it.

Coming nearer to our subject, the eras of excitement regarding mesmerism, animal magnetism or hypnotism, which at intervals would seem almost to recur like panics, under some occult law in periods of ten or twenty years, will be suggested. They have come and gone, doing little good and much harm, and leaving behind them a trail in which harm and good commingle, the former predominating. When the author speaks of harm and good he is limiting his meaning to the matter which concerns us most in this paper, namely, that of the cure or relief of disease. Scientific results, which cannot be measured in the same balance with therapeutic achieve-

ments, have come from a study of hypnotic phenomena. Some years of experimentation and many years of observation have led the writer to the belief that hypnotism as a therapeutic procedure, while of some value, has its decided limitations. Psychotherapeutics, of which the practice of hypnotism for remedial purposes may be regarded as a phase, has also its decided limitations. The thoughtful physician will recognize and act upon these limitations.

On arising from the reading of some of the chapters in the book of Du Bois, one cannot help feeling either that this writer is occasionally oversanguine or mistaken in the permanence of some of his results, or else that he has powers of healing by reasoning and persuasion far exceeding those possessed by other mortals. While the author states that he would not for a moment question the verity of his reports, it has seemed to him with regard to some of them that, like the reports of cures from operations or from new medicinal remedies, sufficient time has not been allowed before recording to decide on the real merits of the treatment. It is true that he tells us of the relapses of his patients and of his occasional failures, but discounting these his results still remain apparently so brilliant that it is hard to reconcile them with our experience, even making all allowance for the superior powers of the recorded. Take, for instance, his reports of his successes by his methods of persuasion in the treatment of insomnia and of some of the obstinate forms of tic. In these disorders, while such measures are useful as adjuvants and in rare cases efficient for radical cures, they will, the author believes, fail even when exercised by those who frequently from their personality or training are most capable of using them successfully.

BARIUM, A CAUSE OF THE LOCO-WEED DISEASE.

As the result of an original research on this subject, published in Bulletin 129 of the U. S. Department of Agriculture, CRAWFORD contends that:

1. Conditions analogous to those met

with in locoed animals occur in other portions of the world, especially in Australia.

2. The main symptoms described in stock on the range can be reproduced in rabbits by feeding extracts of certain loco plants. Those especially referred to here under the term "loco plants" are *Astragalus molissimus* and *Aragallus lamberti*.

3. The production of chronic symptoms in rabbits is a crucial test of the pharmacological activity of these plants.

4. The inorganic constituents, especially barium, are responsible for this action, at least in the plants collected at Hugo, Colo. Perhaps in other portions of the country other poisonous principles may be found.

5. A close analogy exists between the clinical symptoms and pathological findings in barium poisoning and those resulting from feeding extracts of certain loco plants. Small doses of barium salts may be administered to rabbits without apparent effect, but suddenly acute symptoms set in analogous to what is reported on the range.

6. The administration of sulphates, especially Epsom salts, to form insoluble barium sulphate, would be the chemical antidote which would logically be inferred from the laboratory work, but of necessity this would have to be frequently administered, and its value after histological changes in the organs have occurred remains to be settled. But even the treatment of acute cases of barium poisoning in man is not always successful, even when sulphates combined with symptomatic treatment are employed. The conditions under which the sulphates fail to precipitate barium must be considered. At present it seems best to rely on preventive measures rather than on antidotal treatment.

7. Loco plants grown on certain soils are inactive pharmacologically and contain no barium. In drying certain loco plants the barium apparently is rendered insoluble so that it is not extracted by water, but can usually be extracted by digestion with the digestive ferments.

8. The barium to be harmful must be in such a form as to be dissolved out by digestion.

9. In deciding whether plants are poison-

ous it is desirable not merely to test the aqueous or alcoholic extract, but also the extracts obtained by digesting these plants with the ferments which occur in the gastrointestinal tract.

10. It is important that the ash of plants, especially those grown on uncultivated soil, as on our unirrigated plains, be examined for various metals, using methods similar to those by which rocks are now analyzed in the laboratory of the United States Geological Survey.

11. It is desirable to study various obscure chronic conditions, such as lathyrism, with a view to determine the inorganic constituents of lathyrus and other families of plants.

THE PREVENTION OF TROPICAL ABSCCESS OF THE LIVER BY THE TREATMENT OF THE PRESUPPURATIVE STAGE OF AMEBIC HEPATITIS.

ROGERS asserts in *Archives of Internal Medicine* for June, 1908, that the value of ipecac is very great. In giving large doses of ipecac in amebic dysentery and hepatitis, precautions have to be taken to avoid vomiting, especially if it is possible that an abscess of the liver has already formed. The usual method is to give either tincture of opium or chloral hydrate some twenty minutes before the freshly made pills, or bolus, of ipecac, no food or drink being given for several hours before and after the dose, which is best administered once a day in the evening. Recently the author has had the drug put up in quantities of five grains in keratinized capsules, which are not dissolved until they reach the small intestines. This has worked very well, no antecedent sedative being required. Dr. F. B. Grubbs, of the United States Army, has recently informed the writer that the same desirable effect is obtained by coating ipecac pills with melted salol, but has not yet had an opportunity of trying it. From 30 to 60-grain doses of the drug have been used, but the smaller quantity appears to be efficient. It should be continued for at least two weeks at increasing intervals, as two of his earlier cases, in which the ipecac

was discontinued as soon as the temperature fell, relapsed some months later, presumably owing to the latent amebic ulcers not having been completely cured.

There remains to be considered a very important question: What is the usual duration of the presuppurative stage of amebic hepatitis, during which the ipecac treatment will avert the formation of an abscess of the liver? An examination of the author's records of the last seven years has furnished the following data on this point: Out of 53 native patients admitted to the hospital with liver abscess, often bulging through the thoracic or abdominal wall, 50 per cent gave a history of over two months' illness, and 38 per cent more between one and two months; 9 per cent from two weeks to a month, and only one case, or 2 per cent, had been suffering for less than two weeks. Among 26 cases in Europeans there had been fever of hepatitis for over one month in 50 per cent, for from two weeks to a month in 34.6 per cent, and of less than two weeks in only 15.4 per cent, the times being 9, 9, 11, and 13 days, respectively, in these four cases. It is clear from these figures that in the vast majority of instances there is ample time for the diagnosis by blood examinations, etc., and for the ipecac treatment being carried out during the presuppurative stage of acute amebic hepatitis. Very rarely multiple abscesses may develop within a few days with extreme acuteness, but even here the only chance of saving the patient is in the immediate ipecac treatment.

The author's experience of this treatment leads him to believe that it is not too much to say that over 90 per cent of amebic abscesses of the liver can and ought to be prevented by the methods described in this and in previous communications, and thus one of the greatest scourges of some tropical countries may be conquered by the prompt use of a simple medicinal treatment, based on the correct conception of the true pathology of the disease derived from prolonged combined microscopic and clinical observation.

THE ABUSE OF ALCOHOL IN THE TREATMENT OF CHILDREN'S DISEASES.

TOWNSEND says in the *Boston Medical and Surgical Journal* of July 30, 1908, that among the most frequently used remedies in the diseases of children, alcohol probably ranks first. With its long reputation as a stimulant, it is natural that alcohol should be given both in the acute and in the chronic diseases of children. If the physician does not order it, the parents are apt to suggest its advisability in all exhausting illnesses. The very name pneumonia, for example, suggests to most parents and physicians the use of alcohol to stimulate the infant or child, so as to carry it through the exhausting attack of this dreaded disease. The same may be said of diphtheria, although, fortunately, antitoxin has largely robbed alcohol of its rôle in that affection. In the prolonged summer diarrheas, many of which take on a decided septic character, alcohol is the sheet-anchor of many practitioners, and the drug is given in large amounts.

If, however, we are to believe the conclusion drawn by some recent students of the question, that alcohol acts as a narcotic and depressant in small as well as in large doses, a halt should be called to the indiscriminate use of this drug. However this may be, and it is not the intention of the author to discuss the question here, it would be well for a moment to consider the differences in the effect of alcohol in children and in adults. Most adults have a firm belief in the stimulating action of alcohol, and are probably benefited by their faith in its use in exhausting illness. This belief is, of course, absent in infants and young children. Again, children live in the present. If they are comfortable they do not fret about past sufferings, nor anticipate trouble to come. Adults, on the contrary, no matter how comfortable they may be in the present moment, often worry about past or future sufferings, about domestic affairs and financial matters. Alcohol in acting on the higher centers, whether the action be a depressing one or not, appears, at least, to act as a stimulant by making the

patient forget his worries, for the time being. Whether the general and lasting effect be a good one or not need not be discussed here, but the point the writer wishes to make is that these partially psychotherapeutic actions of alcohol, which may have an immediately good effect in adults, are largely absent in infants and children. Another difference between children and adults as regards alcohol is that to many adults alcoholic drinks are pleasing to the palate, while they are generally distasteful to children. Furthermore, in some adults the use of alcohol has become habitual—a drug habit—and this may require its continuance during disease. It is, of course, rare that this latter state of affairs exists in childhood.

In the gastrointestinal disturbances of summer, due primarily to infected food supply, the use of alcohol in the form of brandy or whisky and of proprietary food extracts, containing often a large amount of alcohol, is common. The most important factors that make toward the recovery of the infant in these diarrheal diseases are, first, a cleansed and unirritated gastrointestinal tract, and secondly, a bland and unirritating food that can be assimilated. Any food or drug which interferes with these two factors is distinctly a handicap. Food digested and absorbed is the best stimulant such an infant can have. The use of alcohol sometimes makes the difference between a quiet and an irritated regurgitant stomach.

Acute lobar pneumonia is the type *par excellence* of a self-limited disease. It runs an almost universally favorable course in children and in infants who are not weakened by other diseases, or handicapped by injudicious drugging, or overwhelmed by overheated and foul air, and by heavy poultices or pastes. Yet how often, with the best intentions in the world, do we see infants suffering from this disease given alcohol, often in large amounts. The writer is convinced that these cases do far better with no alcohol at all, and his observations in a large number of cases of this disease would bear out the theory that the action

of alcohol in any considerable amount is a depressing one. Whether small doses are harmless or not it is difficult to discover.

AN ANALYSIS OF FOUR HUNDRED CASES OF EPIDEMIC MENINGITIS TREATED WITH ANTIMENINGITIS SERUM.

This analysis, which has a most important bearing upon the treatment of this virulent disease, is published in the *Journal of Experimental Medicine* of September 5, 1908, by FLEXNER and JOBLING. Their conclusions are as follows: The analyses of histories of cases of epidemic meningitis which have been presented in this article furnish convincing proof that the antimeningitis serum when used by the subdural method of injection, in suitable doses and at proper intervals, is capable of reducing the period of illness; of preventing, in large measure, the chronic lesions and types of the infection; of bringing about complete restoration to health in all but a very small number of the recovered, thus lessening the serious, deforming, and permanent consequences of meningitis; and of greatly diminishing the fatalities due to the disease.

FURTHER STUDIES UPON ANAPHYLAXIS.

This important subject dealing with the untoward effects of diphtheria antitoxin which are sometimes developed in hypersensitive individuals is reported upon by ROSENAU and ANDERSON in the *Bulletin of the Hygienic Laboratory* for June, 1908, No. 45. Their experiments demonstrate that the horse serum used in cases followed by sudden death is no more toxic for guinea-pigs than antitoxic horse serums used extensively in human therapy without untoward symptoms.

It is their belief that it is not the special toxicity of the horse serum, but the sensitization of the patient, which accounts for the collapse or sudden death sometimes following the injection of horse serum.

They are still unable to account for the ways in which man may be sensitized to a

foreign protein. It seems perfectly plain, however, that man may be so sensitized.

In previous publications they suggested that the essential lesion of serum anaphylaxis is probably localized in the respiratory center, and the association of asthma and hypersusceptibility to horse serum in man seems to lend some weight to this hypothesis.

The knowledge of the fact that an injection of horse serum into some asthmatics may be attended with danger should be considered in the use of antitoxin.

The repeated injections of small amounts of horse serum sensitize guinea-pigs.

Repeated injections of large amounts render guinea-pigs partially immune.

Repeated injections of small amounts of serum into sensitized guinea-pigs have no appreciable effect.

Sensitized guinea-pigs cannot be immunized by repeated injections of heated serum (100° C. for one hour).

The author suggests a possible relation between the toxemias of pregnancy and anaphylaxis.

Guinea-pigs cannot be sensitized with guinea-pig fetal blood. This shows that the fetal blood of the guinea-pig does not contain an alien protein for the mother.

Guinea-pigs may be sensitized and subsequently poisoned with guinea-pig placental extracts.

COCILLANA.

EARP in the *Central States Medical Monitor* for August, 1908, states that after the use of cocillana, in certain respiratory diseases, he has found expectoration was more easily accomplished. The cough was generally less violent, and he found codeine and heroin valuable adjuvants. In tuberculosis the amelioration of the cough was more pronounced when the fluid extract was used than when codeine or heroin was used independently. The lingering cough which frequently follows some of the acute infectious diseases is very often benefited by the use of cocillana.

In two cases of tuberculosis in which considerable dyspnea and expectoration

took place with great effort, he found a betterment of the condition so far as relief was concerned, but did not observe any influence on the profuse perspiration at night. The laxative effect was noticeable, and in one case the patient was so enthusiastic over the relief he obtained that he increased the size of the doses and took them more frequently; as a result there was violent purging and vomiting, followed by profound prostration, which necessitated the prompt use of stimulants. After this condition, which might be called a toxic effect, the physiological action was more noticeable even when small doses were taken.

In one case of asthma the patient obtained some benefit. In two cases of chronic bronchitis the author used the fluid extract of cocillana in doses of 10 to 30 minims without the addition of any other remedy. In one the cough soon became less violent, the expectoration easy, and no untoward symptoms; in the other, a lady of seventy years, the expectoration seemed to be profuse yet thin for at least two weeks, but after this it became scanty, the appetite improved, and there was general betterment in the nutrition. This case had suffered from indigestion, and there was more relief than had been obtained by other remedies; this probably accounts for the improvement in nutrition.

In combination with heroin the author used this agent in two cases of whooping-cough and was impressed with the therapeutic result. He feels, therefore, that it should have a more extended trial.

FAVUS.

Low in the *Edinburgh Medical Journal* for August, 1908, reports upon his methods of treating favus.

The cases he reports varied greatly in severity, 34 affecting all the scalp, 10 the greater part of the scalp, 4 being limited to the vertex, 2 having only small areas affected, and 3 cases being of doubtful distribution.

The treatment carried out in the favus cases was exactly the same as in the tineas,

with the modification that instead of the sulphur and ammoniated mercury ointment used for the ringworms a 10-per-cent oleate of copper or resorcin ointment was used. As a great many of the favus children had no one at home to look after them they came daily, or rather were supposed to come up daily, to have their heads washed and rubbed with ointment.

All the 53 cases except 13 were also treated by x -rays. The 13 cases which were not rayed were all only seen once, and either came from the country for advice, and returned under the care of their own doctor, or were town cases which did not return for x -rays. Of the cases x -rayed, all the scalp was exposed in each case. On an average each scalp was x -rayed all over (i.e., 12 exposures to different areas) $2\frac{1}{2}$ times. One case had the whole scalp rayed no fewer than eight times in two years, and another case, six times in a year and a half. When one considers that the former case received in all 96 exposures in two years, and that a certain amount of the rays penetrate the skull, one wonders what effect these rays have on the subjacent brain. But no effects have so far been observed in the mental condition of these children.

The results of treatment show in the 45 cases in which one can judge 18 per cent of cures; 36 per cent of the cases improved; and 46 per cent of the cases remained *in statu quo*. The cured cases took a little over an average of eleven months to complete the cure, the shortest time being three months and the longest thirty-five months. The cases marked "improved" were treated on an average for $7\frac{1}{2}$ months. The cases marked *in statu quo* were under treatment on an average of 10.2 months, so that about one-half of the cases were under treatment for over ten months each with absolutely no improvement. This result is not encouraging, but is entirely due to the want of systematic application of the treatment by the patients or those responsible for the carrying out of the treatment. This is well exemplified by two cases under the author's care, both of which were treated in the wards of the skin department of the Royal Infirmary, Edinburgh, till cured. One of

the cases, which had suffered from the disease for twenty years, was cured in three months, and the author has no doubt that equally good results could be got in the great majority of cases, if one could have the cases continuously under observation and control till a complete cure was effected. These patients are x -rayed. The hair falls out after the x -rays, and with the washing and application of ointment the scalp gets fairly clean; then the patient disappears before the cure is complete, only to reappear again a month or so later with the disease just as bad as ever.

THE TREATMENT OF CHOLERA BY SALINE INJECTIONS.

GUPTA in the *Calcutta Medical Journal* for August, 1908, states that the effect of intravenous injection is to cause pulse to return to the wrist, and it becomes stronger; the patient becomes quiet; the cramps disappear; the body becomes warm; any pain in the abdomen, if present, disappears; cyanosis becomes less; the voice becomes normal. The patient says he feels better, and may even go to sleep during the injection. Perspiration, if present, stops. In some cases in which the patient was not perspiring before, he may get a profuse perspiration during the injection. In many cases rigor occurs during the injection or soon after it; but it does not seem to do any harm, though the temperature may temporarily rise two or three degrees above the normal.

Sometimes headache is complained of, probably due to too quick entrance of the saline.

The effect of the injection is so striking and sure that whoever has seen it has become convinced of its good results.

As regards its permanency, generally one injection is sufficient. In a few cases two, and in rare instances three, injections may be required, and it is almost certain that the patient is sure to survive the collapse stage.

Intravenous injection seems to do good in three ways:

1. All the troubles of the collapse stage

or of the stage of full development completely cease or are greatly ameliorated.

2. Toxins are diluted.

3. In many cases, by preventing the congestion of the kidneys, it prevents the degeneration of kidney epithelium and thereby minimizes the risk of uremia later on.

The author is inclined to believe that the cases in which uremia sets in generally have a prolonged stage of collapse, during which the kidneys have become degenerated, but regrets he has not full notes to substantiate this view.

Probably there are two causes acting harmfully on the kidneys:

(a) Owing to the thickened condition of the blood and diminished force of the heart, blood cannot pass as quickly through the kidneys as normally, and thus the proper nutrition of the kidney cells is interfered with.

(b) The toxins absorbed from the intestines probably have some direct deleterious action on the kidneys. However that may be, the albumin was found in all cases in which the first urine passed after the reaction was examined. Albumose was not found in any case in which it was tested for. Indican was present in a few cases.

The use of saline of 1.25-per-cent strength has a beneficial effect on the purging as well, which either ceases or becomes very much less. All patients lost after adopting saline of this strength were from uremia. In those in which uremia sets in the pulse remains good almost to the end; he may not pass any urine, or if it is passed at all, it is very little in quantity (2 to 8 ounces in twenty-four hours). Later on even this little urine also ceases, the patient again becomes restless, and gradually drowsiness comes on, which passes to unconsciousness; the breathing becomes hurried, sighing or hissing in character, oftentimes groaning; the body remains warm. There is occasionally twitching of the tendons of the forearm and low delirium. Death occurs after suffering from these uremic symptoms in from two to three or more days. Gupta says it is apparent that we have an almost sure method of

combating the full development and collapse stage of this disease.

But in the reaction stage the great trouble is the complete anuria or very little amount of urine in twenty-four hours. Under the injection method of treatment most of the patients (about 63 per cent) recover completely, though the convalescence is a little more prolonged than if the patient had recovered with rectal injections alone.

THE TREATMENT OF TAPEWORM.

In the *Clinical Journal* of August 5, 1908, HALL gives the following directions for the treatment of tapeworm. To a patient he gave first; after using a very light diet for two days:

℞ Sodii bicarb., gr. xx;
Sodii sulphatis, ʒj;
Spiritus chloroformi, min. xx;
Aq. menthæ piperitæ, q. s. ad ʒʒj.

Take three times a day.

As a result of this treatment his bowels were freely moved. On the evening of the third day the patient had the following draught:

℞ Magnesii sulphatis, ʒss;
Tinct. jalapæ, ʒʒj;
Tinct. chloroformi co., min. xx;
Aq., q. s. ad ʒʒjss.

Early the following morning male-fern was given in a mixture:

℞ Extracti filicis fluidi, ʒʒj;
Pulv. tragacanth. co., gr. xx;
Spiritus chloroformi, min. x;
Aq. menthæ piperitæ, q. s. ad ʒʒj.

An hour later the dose was repeated, and an hour after the second dose the patient was given half an ounce of castor oil with a drachm of the tincture of jalap. As the bowels did not act very promptly an enema was administered, and this brought away many feet of tapeworm, and the head of a *Tania Mediocanellata* was found among the segments.

The brief notes of the case the author has given will illustrate the points on which he wishes to lay stress. In the first place, he would direct attention to the failure of the previous treatment of the patient. Fifteen attempts had been made to relieve

the patient of his troublesome guest, but though many segments were expelled, the head remained attached to the bowel, and after the usual period of three months segments were again passed. In the second place, he would remark that the directions for treatment given in the text-books in common use are not sufficiently precise. The practitioner, who has probably not seen a case of tapeworm treated during his hospital career, will naturally be compelled to have recourse to his text-book to see what line of treatment should be employed when he is called upon to prescribe for a patient suffering from this complaint. If he refers to more than one text-book he will find great divergency both as regards the dose of male-fern to be employed and the steps to prepare the patient before the administration. The author has looked up the four text-books which he believes are mostly in vogue at the present time. The dose of the liquid extract of male-fern in one book is given as 15 to 30 minims, in two as a drachm to a drachm and a half, and in the fourth the dose is stated to be two drachms. Then as to the method of preparing the patient, one authority says that "in most cases it is sufficient for the patient to have no food after six or seven in the evening, and to take the anthelmintic before breakfast the next morning." Another only says that "it is advisable for the patient to fast several hours before taking it" (*i.e.*, the anthelmintic). A third advises that the patient should "take only liquids, such as milk and beef tea, for a day," and the fourth advises that for two days prior to the administration of the remedies "the patient should take a very light diet." Only one of the four writers mentions anything as to the necessity of medicinal treatment before the administration of the anthelmintic, and he says that the patient should "have the bowels moved occasionally by a saline cathartic."

Following these totally inadequate directions, it is no wonder that medical practitioners fail to treat cases of tapeworm successfully, and if at times the head is expelled it is more by luck than good management that it happens. In order to insure

success in the treatment of these cases several points must be borne in mind. In the first place the intestine must be as empty as possible. In the second place the catarrhal condition of the intestines, which so often exists in cases of tapeworm, must be remedied, as, if the worm be protected by the intestinal mucus, the anthelmintic may not be successful. Thirdly, the advisability of giving the liquid extract of male-fern in two doses; it had been suggested that the first dose causes the worm to relax the very firm hold it has upon the intestine, and the second dose kills it outright. And lastly, the administration of a brisk cathartic to bring away the worm and the male-fern, so as to prevent any toxic effects on the patient from the latter.

All these indications are met by the following plan of treatment, which the author has found to answer in every case in which he has employed it. It may seem rather strict, but in the long run it will save much time and trouble.

For three days previous to the administration of the male-fern the patient should be kept entirely on a liquid diet. He has found that a pint and a half of milk and a like quantity of beef tea answer very well. To promote a free action of the bowels and to favor the removal of mucus a mixture containing twenty grains of bicarbonate of sodium, a drachm of the sulphate of sodium, and twenty minims of spirit of chloroform in an ounce of peppermint water should be taken three times a day.

The night before the male-fern is given the patient should have a draught containing half an ounce of sulphate of magnesium with a drachm of tincture of jalap, and twenty minims of the compound mixture of chloroform in an ounce of water. This should be repeated next morning at 7 o'clock if the previous dose has not operated. At 8 A.M. a drachm of the liquid extract of male-fern made up in a mixture with a drachm of mucilage of tragacanth and a drachm of the syrup of ginger in an ounce of chloroform water; at 9 A.M. this dose should be repeated. At 11 A.M. half an ounce of castor oil with a drachm of tincture of jalap should be given,

and if the bowels do not act within an hour an enema of a pint and a half or two pints of soapy water should be administered. The motions should be carefully examined to find the head, and if the above treatment has been faithfully carried out it may be sought for with confidence. It is desirable to keep the patient in bed for two or three hours after the bowels have acted, as the male-fern may cause faintness. The line of treatment the author has depicted above was originally described by the late Dr. Leslie Ogilvie, and it is to prevent an excellent method from falling into oblivion that he has been induced to pen this communication.

THE TREATMENT OF TRACHOMA.

In the *Long Island Medical Journal* for August, 1908, HANCOCK states that the more he sees of trachoma and the more he treats it the more firmly convinced is he that any case presenting objective symptoms sufficient to permit of a diagnosis being made is a case for operation.

It has been his fortune to have seen or performed most of the operations for the cure of trachoma suggested in recent years, and he has used almost, if not quite, all of the numerous instruments in the line of scarifiers and forceps that have been presented, and has reached what is to him a satisfactory and probably final conclusion concerning their relative merits, which is as follows, viz.: That the only way to cure trachoma is to rupture the granules and express their contents and to follow these procedures for a number of weeks with instillations of a mildly stimulating antiseptic, the last to eliminate traces of infection in a germicidal way and by absorption small and deep granules not affected in the operation. No case should be left without giving careful instruction concerning this after-treatment.

Concerning the instruments, his estimate causes him to state after thorough trial that to his mind the best instrument ever presented for the purpose of rupturing the follicles is the Jameson trachomatome. This instrument does its work thoroughly without injury to the conjunctiva.

Hancock thinks that after the granules have been ruptured every lid so operated upon should be subjected to a thorough "squeezing." An instrument should be used which will expel the contents of the granules and not engage the conjunctiva.

THE IMMEDIATE TREATMENT DEMANDED IN CERTAIN OF THE MORE SERIOUS OCULAR CONDITIONS.

CHENEY in the *Boston Medical and Surgical Journal* of August 13, 1908, gives the following advice. One class of cases that the author wishes to refer to briefly is the perforating wounds of the eyeball. A perforating wound—that is, a wound made by some foreign substance passing through the cornea or sclera—must always be regarded as a serious condition whatever the nature of the object causing the injury. Not infrequently the immediate result is a blind and deformed eye, and enucleation is the only question to be considered. More often, however, an effort must be made to save an eye that will be of some value as an organ of vision, or if this is impossible, one that is at least to be preferred to an artificial eye, and that will not endanger its fellow. The large majority of these patients are working people, mechanics, stone-cutters, and the like, and while a certain number immediately enter a charitable institution and come under the care of an oculist, many others, for the reason that they live at a distance, or for some other cause, are first seen by a man in general practice. It is to be expected that a perforating wound will be followed by inflammation, although it is by no means an inevitable result. At times a general suppuration of the greatest intensity will make its appearance soon after the injury, and treatment seems absolutely of no value in allaying its progress or in preventing a destruction of the globe. In the general run of cases, however, such an unfortunate termination is not to be looked for, and if appropriate treatment can be received early, that is within four or five hours of the injury, the outlook is certainly much better than when treatment is delayed for forty-eight or even twenty-four hours.

It will, of course, be understood that the following suggestions are in the nature of early emergency treatment, and that various modifications and changes may be demanded if a case is under one's care for any length of time.

First, to lessen the chances of infection, or at least further infection, the lids and their immediate neighborhood should be thoroughly cleaned and the conjunctival sac irrigated with a boric acid or some other mild solution. It is impossible to make the conjunctival sac absolutely sterile, but if the patient is placed on the back, the lids separated and the eye washed out with three or four dropperfuls of a boric acid solution, it will at least be clean.

Second, a one-per-cent solution of atropine should be instilled three or four times at five-minute intervals, for the reason that iritis will develop in at least 80 per cent of these perforating injuries. If atropine is not used, and numerous iritic adhesions take place, as they frequently will within the first twenty-four hours, they may very seriously interfere with the future successful treatment of the eye. If the anterior chamber is evacuated, the pupil will not dilate until it is reestablished. It is, nevertheless, advisable to use atropine so that its effects may be obtained as early as possible after the chamber begins to refill.

Third, some simple non-irritating ointment, a piece the size of a pea, should be placed on the inner surface of the lower lid and the eye then bandaged (except in certain injuries that the author refers to presently). A valuable ointment for this purpose is the so-called White's ointment, compounded as follows:

R Hydrarg. bichloridi, gr. 1/12;
Sodii chloridi, gr. 1/4;
Petrolati, 3iv.

Fourth, a good dose of Epsom salts, calomel, or some other active cathartic should be given; and

Fifth, a leech to the temple is a good routine practice and at times is of the greatest value.

When the eye is bandaged, if the pupil is well dilated, it is usually unnecessary to change the dressing oftener than twice a

day, the eye being thoroughly washed out, atropine instilled, and the ointment applied at each dressing.

In injuries from dynamite, powder explosions, firecrackers, etc., where the conjunctiva and the lids are usually more or less burned and lacerated, exceptions are to be made in this treatment, especially as regards bandaging. These cases are very liable to develop a mucopurulent conjunctivitis, and many eyes are lost by a secondary infection of the cornea. Closing up the eye by bandaging under such circumstances would certainly add to the danger of infection. From the experience of the author he believes the best results are to be obtained by washing out the conjunctival sac every fifteen or twenty minutes with a boric acid solution, applying boric acid ointment to the surface of the lids, and in using cold compresses for the first two or three days, not omitting, of course, the instillation of atropine as often as the condition of the pupil may demand.

A delay in transferring these patients to the care of an oculist is, of course, often unavoidable, but a special effort should be made in cases complicated by a prolapse of the iris requiring abscission, and also where the perforating object is a bit of steel lodged in the interior of the eye and whose removal necessitates the use of a magnet.

POSTOPERATIVE HEMORRHAGE FROM THE STOMACH AND INTESTINE.

THELEMANN (*Deutsche Zeitschrift für Chirurgie*, Bd. xciii, Heft 1) states that only a few reports of hemorrhage from the stomach and intestine following operation have been made, and that he has not been able to find a detailed report of postoperative intestinal hemorrhage. He reports two cases occurring in his practice, both of which recovered. In the first the bleeding followed operation for appendiceal abscess, and in the second operation for rupture of the intestine caused by the kick of a horse.

In most cases no special treatment is necessary, but if the patient's life is threatened food should be withheld, and the intestine

washed out with soda solution; subcutaneous injection of salt solution and clysters containing ergot should be given. Ice-water clysters as recommended by Kehr cannot be given in the presence of collapse, nor can operation be carried out. In these cases chief dependence must be placed upon saline infusion, which should be persevered in until the bleeding has ceased. It is also advisable to give styptics internally.

THE "LIGHTNING" TREATMENT OF CANCER.

ROSENKRANZ (*Berliner klinische Wochenschrift*, Jahrg. 45, Nr. 20) reviews the work of Keating-Hart in the treatment of cancer by a method which he first reported at the Milan Congress for Electrology in September, 1906. The method consists in the application of the spark of the exaggerated high-frequency alternating current, or so-called Tesla current.

By applying this spark to a tumor, the latter is rendered anemic and is softened so that it can easily be removed with the curette. It also gives quick and lasting relief to pain. In ulcerated tumors in the skin or mucosa, or in tumors under the skin after having been laid free with the knife, the electrode is carried quickly from place to place over the surface. The length of the spark is varied from two to six centimeters. In cancer of the vagina or rectum application is made after exposing the part with a speculum. After the tumor tissue is softened it is removed with curette, scissors, or knife. Then after controlling the hemorrhage the spark is again applied to the wound surface from a few minutes to half an hour or longer. After removal of deeplying growth the incision may be sutured at once, but in some cases, as seems necessary, drainage may be used. Anesthesia is necessary because the application of the spark is very painful. Neither the operation table nor the anesthesia mask dare be of metal, for burning of the patient may result from sparks which leap over their limits.

Three varieties of tumor have been treated: Cancer of the skin; cancer under the skin, notably those of the breast; and cancer

of the tongue, mouth, rectum, and uterus. In many of the skin cancers other treatment, as by radium, x -rays, or surgical operation, had already been employed, so that the exact credit due the electric treatment cannot be accurately estimated; but after its use was begun the disease quickly disappeared, and with a cosmetic result that was often astonishing. Of the 70 cases thus treated almost all showed good results.

As to the second category of cases, with the exception of two, in which there was metastasis to the spinal column and the liver, noteworthy results were produced. The results in the third class of cases were also very satisfactory.

THE THERAPEUTIC APPLICATION OF SUNLIGHT IN SURGERY.

HAEERLIN (*Wiener klinische Rundschau*, Jahrg. xxii, Nr. 22) says that the first influence of sunlight is upon the skin, in which it causes a diffuse reddening and later a deposit of pigment in the deeper layers. Excessive sunlight produces erythema, inflammation, and blistering of the skin. This is due to the blue and violet, also the invisible ultraviolet, rays and not to the heat rays, for the same thing occurs in the frigid zone. The body shows after a sun-bath an increase of temperature, oxidation, and hemoglobin. It is possible that the energy of sunlight penetrates to the deeper tissues and influences the internal organs.

The retarding and bactericidal influence of sunlight has been fully demonstrated. In a therapeutic way sunlight has been used in the form of sun-baths for the whole body. In this it has given good results when used with care. For local affections it has been used by Finsen in the treatment of lupus, the rays being concentrated by rock crystal and the heat rays being removed by passing through water. The unfavorable weather in Copenhagen was the chief cause of his later turning to the arc light as a source of light.

Up to the present the best results have been reported from Switzerland, for in the dry, rarefied air of the Swiss mountains there is not much absorption of the power-

ful ultraviolet rays as they pass through the atmosphere. Here good results have been obtained in the treatment of all forms of surgical tuberculosis, ulcers, suppuration, and neoplasm. Even in the lowlands of Europe excellent results have been obtained. The author has observed very rapid epithelializing of wounds under the influence of the sun's rays. He has never seen the exuberant granulations and slow healing which often accompany treatment by ointments and bandages. Good results were observed in incised wounds, burns, drainage tracts, and leg ulcers.

The practical use of the sun's rays is extremely simple. The part to be treated should be exposed by an open window for a time varying up to several hours daily, depending upon the intensity of the light. Sunlight which has passed through the window pane is not useful because the ultraviolet rays have been filtered out. Between the exposures the wound should be lightly covered with gauze.

RECURRENCE OF GALL-STONES AROUND A SUTURE INSERTED AT PREVIOUS OPERATION.

FLÖRCKEN (*Deutsche Zeitschrift für Chirurgie*, Bd. xciii, Heft 3) reports one case of his own from Enderlen's clinic, one of Enderlen's, and six by other surgeons of recurrence of gall-stones with a silk suture inserted at the previous operation for a nucleus. In order to avoid this the author advises that either catgut be used or that if silk be employed it be left long so that it may be removed.

GELATIN AND SALT-WATER INJECTIONS FOR INTESTINAL HEMORRHAGE IN TYPHOID.

WITTHAUER (*Münchener medicinische Wochenschrift*, Jahrg. 55, Nr. 18) calls attention to the fact that the usual treatment of intestinal hemorrhage during typhoid fever by means of opium, ice-bag, ergotin, adrenalin, and similar measures very frequently fails to bring good results. He has recently used subcutaneous injections of gelatin and saline solution in four severe

cases of hemorrhage in typhoid, with good results in three of the cases. He has used gelatin in 10-per-cent solution in the quantity of 50 Cc. to the dose, repeated every day or every other day, and given two to six times while the bleeding lasted. If the patient is conscious gelatin may be given by the mouth. Combined with the gelatin injections are given subcutaneous injections of normal salt, continued until two days after bleeding has stopped. This treatment does not interfere with other supportive measures. The author believes that gelatin and normal salt solution injections are of unusual value in such hemorrhages.

THE TREATMENT OF VENEREAL ULCERS WITH HOT IRRIGATIONS.

ZINSSER (*Münchener medicinische Wochenschrift*, Jahrg. 55, Nr. 18) states that he has for several years used hot irrigations in the treatment of venereal ulcers, and has found that it will in a few days cleanse an unyielding and malignant venereal ulcer and quickly cause subsidence of a phagedenic process. The results have been astonishingly good in cases of gangrenous ulcers with necrosis of the surrounding tissues; excessive, foul exudate; lymphangitis; and high fever.

The treatment is very simple, and consists of irrigation three to five times daily with a stream of potassium permanganate solution, 1:4000, as hot as can be borne. There is used at each sitting four or five liters run from a height of two to three meters in a stream about two millimeters thick. All the angles and nooks of the ulcer must be searched out and cleansed. The temperature of the solution can range from 45° to 50° C. After irrigation the ulcer is dried with gauze, sprinkled with iodoform, and tamponaded with iodoform gauze saturated with spirit of camphor and water equal parts. Over this hot linseed poultices are placed and frequently renewed. In gangrenous cases the treatment should be repeated every two or three hours. Many patients can carry out the treatment themselves when shown how to do it. In twelve to twenty-four hours the entire picture of the disease

will be changed. The necrotic mass has separated, the bad odor has disappeared, the secretion is much less, the temperature again normal. A few days later granulations can be seen at the edge of the wound, and epithelialization has begun.

The most remarkable results are seen in the phagedenic ulcers in which in a short time the entire glans penis has melted away, and in buboes in which the ulceration rapidly spreads over the abdomen or the thigh, and in which in spite of all other forms of treatment the process continues to spread. In these cases the invasion of the tissues stops as soon as the above treatment has been instituted.

PRIMARY PNEUMOCOCCIC PERITONITIS.

SMITH (*British Medical Journal*, May 30, 1908) reports two cases, each beginning with pain, rigidity, and tenderness in the right iliac fossa, together with hurried breathing, high temperature, and obscure chest symptoms. The diagnosis in each case suggested appendicitis. After some delay the abdomen was opened, evacuating large quantities of pus, in which was found a pure culture of the pneumococcus.

OPERATIVE TREATMENT OF CANCER OF THE COLON.

PETERMAN (*Archiv für klinische Chirurgie*, Bd. lxxxvi, Heft 1) reports 115 cases of cancer of the colon from Rotter's clinic. Of these 68 were males and 47 females. The ages range from twenty to eighty-five; the greatest number were between fifty and sixty years. As to the seat, 56 cases were in the sigmoid, 17 in the transverse colon, 13 in the cecum, 12 in the hepatic flexure, 8 in the splenic flexure, 7 in the ascending and 4 in the descending colon. Of the 115 cases, 58 were operable and 57 inoperable.

In all there were 47 cases of obstruction. These cases withstand operation very badly, and any operation done must be of the most conservative nature. In 30 cases an artificial anus was produced, and of these 14 died; resection of the tumor was done in 14 cases,

of which 11 died; side-to-side anastomosis was done in 4 cases, 2 of which died. Of the deaths in obstruction, two were due to pneumonia, and the remainder either to collapse at operation or peritonitis. In case of obstruction, if the tumor was operable, an artificial anus was formed in the cecum or ileum, and at a later operation the tumor was removed and the fistula closed; if the tumor was inoperable a fistula was produced close above the tumor.

In operable cases in which there was no obstruction and the patient was in fair condition, enteroanastomosis was done so as to eliminate the affected portion of the intestine; when the patient's condition was poor a fecal fistula was produced. Of these cases some continued to go down and shortly died; others gained weight and felt relieved and were still living a year after operation.

The radical removal of carcinoma of the colon when done early was, in immediate and remote results, a very satisfactory operation. No definite operative procedure can be recommended for all cases. The choice depends upon the seat of the tumor as well as the age and condition of the patient.

Radical operation was done in 52 cases. The ideal operation consists in resection of the tumor and immediate anastomosis of the intestine. This was done in five cases, in one case twice. This latter patient stood the operations well. The other three died, two of peritonitis from leakage and one of pneumonia.

Resection of the tumor with subsequent anastomosis was done in 12 cases; three died as a result of operation; the remaining cases were well three weeks after the operation, but two of them died later of recurrence. In 23 cases the two-stage operation of Bloch was performed. This consisted in bringing out the tumor, sewing the knuckle of intestine in the belly wound, removal of the tumor, and in this way forming a fistula, which was closed at a later operation. Three of these cases died, but the results in the remainder were very good.

In nine cases a three-stage operation advised by Schloffer was done. This consisted

in first forming an artificial anus; later the tumor was resected and the intestine anastomosed; at the third operation the anus was closed. Two patients did not recover from the operation; the remainder made an operative recovery, but two died later of recurrence.

PYELITIS IN PREGNANCY AND THE PUERPERIUM.

VINEBERG (*American Journal of Obstetrics and Diseases of Women and Children*, June, 1908) states that for the causation of pyelitis in pregnancy two conditions are essential—i.e., obstruction in some part of the genito-urinary tract and pathogenic bacteria. Obstruction may be due to pressure either of a pregnant uterus upon the ureter, or to changes in the vesical mucosa incident to the same cause. Of the infective agents usually it is the colon bacillus which is responsible. The right kidney is the one affected in the vast preponderance of cases. The disease in the majority of cases occurs in the latter half of pregnancy. In some cases the disease is preceded by symptoms of vesical irritability; in others the onset is by a chill followed by a fever, with recurring attacks, the patient becoming promptly septic. The pain may be diffused over the abdominal cavity, and in the course of a few days becomes localized over the region of the affected kidney. Deep pressure elicits tenderness. Thickening and tenderness of the ureter as it crosses the anterior wall of the vagina are present in a certain number of cases. The urine may show no change in the early stage beyond a trace of albumin and a rather high color. In the course of a day or so pus appears, often blood-corpuscles and a few hyaline casts. On bacteriological examination the colon bacillus may be found in pure culture, rarely mixed with staphylococci or streptococci. Coincident with the heavy deposit of pus there is usually a subsidence of the fever and the pain for obvious reasons. The urine may be free from pus for an entire day. In some cases the pyelitis is due to the gonococcus and is an ascending

one, and is usually slow and preceded by bladder disturbances. Then, after a shorter or longer interval, during which the bladder symptoms have been entirely forgotten, there develops suddenly high fever with abdominal pain which soon becomes localized to the region of one kidney, and later the pain is felt also in the other kidney. In these cases there is bacteriuria without pus. Pain and tenderness may be present over McBurney's point in pyelitis. It is also felt over the kidney region.

The prognosis is as a rule good, the disease running its course in from seven to fourteen days. A few cases show no such limitation, the disease persisting until pregnancy is interrupted artificially or spontaneously, or relief is afforded by purely surgical measures. Recurrences in the same pregnancy have been observed by some writers. It is not safe to permit a woman to become pregnant again after having passed through an attack.

Treatment consists in rest in bed, ice-bag over the affected kidney, milk diet, a moderate quantity of water, lying on the opposite side to that of the affected kidney, and the administration of some urinary antiseptic, preferably urotropin. If this treatment fails to give relief or the disease runs a very protracted course in spite of the treatment, the question of interrupting the pregnancy or surgical intervention on the affected kidney will come up. In many cases nature will decide the question by bringing on a spontaneous abortion. Nephrotomy has been performed in some cases, with favorable results. In others a ureteral catheter has been passed to the affected side so as to give free drainage to the pus.

LATE RESULTS AFTER OPERATIONS FOR BENIGN DISEASES OF THE STOMACH AND DUODENUM.

MOYNIHAN (*Annals of Surgery*, June, 1908) after a brief review of his operative treatment in this class of cases and his late results submits the following as to lessons to be learned therefrom:

The present condition of all the patients

now alive is as follows: 211 patients are cured; 9 patients are improved; 12 patients are no better; 9 patients are doubtful, 6 patients not recently reported; total, 247.

Thirty-four patients are dead, 18 as a result of the operation, 7 of carcinoma of the stomach, 9 from other causes unconnected with the disease of the stomach, or the operation performed for its relief.

Such is a brief review of the after-history in all his cases.

1. The operative treatment of stomach disorders should be confined exclusively to those cases in which an organic lesion is present. Unless there is a palpable and demonstrable ulcer in the stomach or in the duodenum, or some condition which hampers the proper action of the stomach, the symptoms are not due to any pathological cause capable of being relieved by surgical interference. However careful our preliminary investigations may be, we shall from time to time display upon the operation table a perfectly normal stomach. We must not then endeavor to cover our diagnostic disaster by the performance of an unnecessary operation upon the stomach, but rather must we candidly confess that our exploration has proved negative. To perform gastroenterostomy in such cases has been proved to lead to unsatisfactory results, whereby the operation is discredited.

2. In cases of acute perforating ulcer, the perforation should be closed or the ulcer excised. When the ulcer lies upon the lesser curvature nothing more is necessary than this. The after-history of such cases shows that they are relieved from all disabilities referable to the stomach. When the ulcer is prepyloric, pyloric, or duodenal, gastroenterostomy also should be performed. It doubtless hastens the immediate recovery of the patient by affording an easier exit from the stomach than that impeded by the ulcer, and it forestalls the almost certain onset of symptoms which only a short-circuiting operation can relieve.

3. When a non-malignant lesion is discovered the treatment appropriate to it depends upon its position in the stomach. If an ulcer be placed on the lesser curvature

at some distance from the pylorus, in such a position that no obstruction is offered to the onward passage of the food, excision should be performed. In such cases the relief from gastroenterostomy may be incomplete, and it is probable that the later onset of malignant disease occurs in a large proportion of cases. In some cases, however, when the ulcer is on the curvature or on the posterior surface of it, adherent to the pancreas, relief follows if gastroenterostomy is performed on the cardiac side of the lesion. It may be that the ulcer when anchored impedes the proper movements of the stomach, or that the nerve-supply being interfered with some local paresis of the gastric wall results.

4. If the ulcer be prepyloric, pyloric, or duodenal, gastroenterostomy should be performed. It is desirable also to infold an ulcer whenever possible, for both hemorrhage and perforation have occurred from ulcers for which gastroenterostomy has been performed months or years before. The local treatment of the ulcer is always desirable and is generally easily performed.

5. The most satisfactory method of gastroenterostomy is the posterior no-loop operation, with the almost vertical application of the bowel to the stomach. The vertical position is that into which the jejunum falls most easily in the normal (that is, the erect) position of the body. A deviation to one or the other side if slight is of no importance, and entails no untoward consequences.

6. Regurgitant vomiting occurs as a result of the "loop" operation, whether anterior or posterior. It is relieved almost certainly by an enteroanastomosis. Patients who suffer from it may be relieved entirely of all symptoms for which they originally sought relief. An operation that is mechanically imperfect relieves the original disorder, though it leaves serious disabilities behind it. The vomiting of bile may be relieved by lavage, and in some patients disappears entirely after the lapse of weeks or months or even years.

7. In cases of hour-glass stomach the surgical treatment necessary presents special difficulties on account of the frequency

of two lesions—one in the body of the stomach and one at the pylorus, and double operations have consequently to be frequently performed.

DEAVER, writing on a similar topic, and including in his paper a report of his cases, draws from an analysis of these the following conclusions:

1. The operation of choice should always be performed when feasible; when not feasible, the operation of necessity should be performed.

2. All cases of stenosis of the pylorus, whether due to a neoplasm, cicatricial contraction, hyperplasia, pylorospasm, or what not, should be treated by operative interference, preferably by posterior gastrojejunostomy.

3. All cases of ulcer of the stomach which do not respond to medical treatment promptly, and the various sequelæ of this disease, should be treated by operation.

4. All cases of ulcer of the duodenum which do not respond promptly to medical treatment should be treated by operation.

Deaver's preference in performing gastroenterostomy is by the posterior gastrojejunostomy, no-loop, clamp route.

THE TREATMENT OF GANGRENE IN STRANGULATED HERNIAE AT ST. THOMAS'S HOSPITAL, 1901-1905.

CORNER (*Lancet*, June 13, 1908) refers to a previous paper published in the *St. Thomas's Hospital Reports* in 1900 in which was set forth the condition of the bowel found in the strangulated herniæ admitted to the hospital during the ten years 1891 to 1900. Thus a great advance has been made on the condition of affairs at the time of the publication of the first paper, when the mortality for the resection of the bowel and anastomosis in gangrenous strangulated herniæ was 80 per cent.

Since 1900 far more instances of necrosis of the bowel have been recognized and treated than was the case in Corner's original communication.

In the five years from 1901 to 1905 necrosis of the bowel has been recognized

and treated 30 times, as compared with 42 in the preceding ten years.

Of the treatment adopted the balance has been in favor of resection and anastomosis of the bowel whenever possible. Eighteen such cases have been done with eight recoveries, a recovery rate of 45 per cent and a mortality of 55 per cent. In the paper published in 1900 the mortality for the resection of the bowel and anastomosis in gangrenous strangulated herniæ was 80 per cent. Several reasons have contributed to the improvement: First, instances of early gangrene or necrosis have been recognized and treated; secondly, cases in which the bowel, being only "doubtful," has been excised, though this must have been infrequent; thirdly, there are the improvements of modern technique, such as the removal of the bowel far above the obstruction. A further point is that those cases in which the resection of the bowel has been followed by anastomosis, circular enterorrhaphy, have done better than when a lateral anastomosis has been employed.

In the same period, 1901 to 1905, there have been ten cases in which the resection was followed by the making of an artificial anus, an enterostomy, from which there has been only one recovery—i.e., 10 per cent, mortality 90 per cent—a result which agrees very closely with the previous findings of 1900. It is true that this treatment by resection and enterostomy has been reserved only for the very worst cases. Yet in spite of modern advances there has been no improvement in the results. During the same period there has been a diminution by 35 per cent in the mortality of those cases treated by resection and anastomosis of the bowel.

Besides resection with anastomosis or enterostomy, two cases have been treated by the invagination of the gangrenous or doubtful area. Both patients recovered, but the method is obviously applicable only to small areas of necrotic bowel, and in practice will be mainly useful for secluding "doubtful" bowel. The mortality is given as follows: Complicated strangulated inguinal herniæ, 37 per cent; complicated strangulated femoral herniæ, 66 per cent;

complicated strangulated umbilical and ventral herniæ, 80 per cent.

Of 216 strangulated inguinal herniæ, gangrene was recognized in 8—3.6 per cent.

Of 133 strangulated femoral herniæ, gangrene was recognized in 12—9.0 per cent.

Of 46 strangulated umbilical and ventral herniæ, gangrene was found in 10—21.7 per cent.

These results are very similar to those announced in 1900.

FLUSHING THE INTESTINAL CANAL.

MONKS (*Annals of Surgery*, June, 1908), as the result of an experimental and clinical investigation, proposes the following technique:

Make a free opening through the abdominal wall in the median line, the incision reaching from the pubes to or above the umbilicus.

Pick up a loop of bowel high up in the wound. Determine by reference to the root of the mesentery which is really the upper and which the lower end of this loop. This determination is essential, if one wishes to know in which direction the salt solution will flow during the process of flushing.

Make an enterotomy wound in the loop. Allow gas and feces to escape, and insert the tube into that arm of the loop which leads in the direction of the ileocecal valve—in other words, insert the tube pointed downward into the gut.

Allow warm salt solution gradually to distend a few of the loops below this opening. If nothing more than this is done in the way of washing, the substitution in the bowel of the warm salt solution in place of the gas and feces that have escaped will presumably help the patient.

If the patient's condition will allow it, pick up the loop which is apparently the lowest of those distended, make a second opening, insert a second tube—this one directed upward—and allow the wash water to run out through the tube until it becomes clear.

Carefully cleanse and sew up the first enterotomy wound, and return to the ab-

domen that part of the bowel which has been washed out. In fact, as soon as any enterotomy wound is no longer needed it should be cleansed and sewed up, and the loop of bowel which has been sutured should be returned to the abdominal cavity.

Repeat this procedure as many times, consistent with safety, as may seem necessary, each time isolating and cleansing a segment of intestine lower down.

Finally, if the patient's condition will permit further operating, fill the colon with salt solution from the lowest enterotomy opening, and insert a rectal tube to remove any wash water or intestinal contents which may reach the rectum. It is well to insert the rectal tube before attempting to close the abdominal wound, and thus make it easier, by removing some of the wash water in the colon and diminishing its size, to bring together the edges of the wound.

Use great gentleness in all manipulations, and carefully avoid contamination of the peritoneum. The method of protecting the intestines between two layers of rubber dam bids fair to be of real service.

In the event that peritonitis is also present, the peritoneal cavity should be washed out thoroughly, before flushing the intestinal canal, and also after it.

In closing the author states that he does not consider flushing the intestinal canal to be a substitute, in all cases, for tubage of the intestine, or even for ordinary enterostomy. Flushing would seem to be called for only in the most desperate cases—fortunately occurring less frequently, as time goes on—in which the bowels are greatly distended, and in which the patient, overwhelmed as he is with septic or toxic products, will die unless immediate relief is afforded.

CARCINOMA AND SARCOMA OF THE APPENDIX.

HARTE (*Annals of Surgery*, June, 1908) as the result of a careful study of this subject arrives at the following conclusions:

Primary carcinoma of the appendix is present in from one-third of one per cent to one per cent of all cases operated upon for

chronic appendicitis. But few cases are collected at autopsy.

Institutions which make a thorough microscopical examination of all the appendices removed at operation and at autopsy will report a larger percentage of cases of carcinoma of the appendix.

Carcinoma of the appendix, especially of the basal or spheroidal-cell type, is a condition of early life, occurring generally between the ages of ten and forty. There is little tendency to metastasis, and the origin of the disease is, as a rule, in the mucosa.

The disease appears to be slightly more frequent in females than in males.

Acute and chronic inflammations are present and are responsible for the symptoms demanding operation. The growth, while localized, gives no pathognomonic symptoms.

The fact that primary carcinoma of the appendix takes its origin in an inflammatory process forms a very strong argument for the removal of appendices which show evidence of any irritation.

THE TREATMENT OF INTRACTABLE HAY-FEVER AND PAROXYSMAL CORYZA BY RESECTION OF THE NASAL NERVE.

YONGE (*Lancet*, June 13, 1908) describes a new method of treatment for the cases of hay-fever which may be termed desperate, where the patient is condemned to an annual period of miserable discomfort and of complete incapacitation. The method is based on the theory that the stimulus which induces the reflex manifestations, including asthma, is conveyed to the centers by the nasal nerve, this nerve being the afferent path of the reflex. If this theory be correct the prevention of the attacks by the resection of the nerve on each side would apparently be possible. The evidence which can be adduced in favor of the theory is briefly examined. In the first place is considered the evidence suggested by the consideration of the distribution and function of the nasal nerve; secondly, that suggested by the effects of the particular form of treatment

(cauterizing of the nasal mucous membrane); thirdly, that suggested by bilateral resection of the nerve. The stimulus for the ordinary sneezing reflex is conveyed by the nasal nerve, and it may be conjectured that the stimulus which induces the manifestations of paroxysmal sneezing travels up the same nerve. The sneezing which sometimes occurs when a beam of bright light falls on the eye is generally considered to be also referable to this nerve, the impulse traveling from the eye via the ciliary branches. All the other reflexes, vasomotor and secretory, are usually stated to be conveyed by the nerves of ordinary sensation without reference to any special nerve being concerned. The nasal branch of the fifth is not the only sensory nerve of the nasal cavity, as there are filaments, principally derived from the sphenopalatine ganglion, distributed to the posterior parts of the cavity.

On theoretical grounds the nasal nerve conveys the impulse not only for sneezing but also for the other normal reflexes referred to. Also, this nerve is responsible for the production of the abnormal reflexes which are represented in the condition known as paroxysmal coryza and in hay-fever. The manifestations of hay-fever closely correspond in localization to the areas to which the latter is distributed, and the symptoms are explicable on the assumption that they represent the reflex effects of irritation of the nerve. The nasal nerve not only supplies the anterior region of the nasal cavity, but also sends branches to the conjunctiva, the lacrimal sac, the iris, ciliary muscle and cornea, the frontal sinus, the skin of the alæ and the tip of the nose, and the skin of the upper and lower eyelids. The initial symptom is usually a sensation of itching at the inner canthus. Following upon this is a feeling of irritation in the nose, succeeded by sneezing, nasal obstruction, and hypersecretion. The patient may complain of frontal headache or of a sensation of constriction above the eyes. The eye symptoms consist generally of congestion of the conjunctiva, lacrimation, and redness and swelling of the lids, and a certain degree of photophobia often supervenes. Usually

also there is some redness of the skin at the tip and sides of the nose. The fact that in many instances benefit may be obtained as regards the hay-fever attacks and the paroxysms of vasomotor rhinitis by the application of cocaine during the attacks or of the galvanocautery between the attacks to special areas in the anterior region of the nose, has been recognized for a considerable time. This relief is afforded by cauterizing the mucous membrane in the region supplied by the nasal nerve, which seems to be corroborative of the theory that the terminal filaments of this nerve represent the starting-point of the reflex disturbances and that the partial or total failure of the latter to be induced, in those cases in which the mucous membrane has been cauterized, is referable to the irritability of the terminal filaments having been diminished or abolished.

Finally, as to the effect of bilateral resection of the lateral nerve in various forms of vasomotor rhinitis in which this operation has been performed, the symptoms have been completely and lastingly abolished. In the first case in which the operation was performed, the nerve to begin with was divided on the right side only. The symptoms—intermittent nasal obstruction with profuse hypersecretion—were abolished in the nasal cavity corresponding to that on which the nerve had been divided, whereas the disturbances continued to recur periodically in the opposite nasal cavity, as before the operation. The sensation experienced when these attacks occurred was described by the patient as a “feeling of the nose being divided in half,” one side being clear and the other obstructed. The asthmatic attacks from which the patient suffered also continued to recur at intervals. After section of the nerve on the left side the nasal symptoms entirely disappeared and the attacks of asthma ceased.

The author describes his technique in his first case, which was as follows: The nerve was reached by an incision at the inner edge of the orbit, commencing just above the inner canthus and extending upward and slightly outward for about two-thirds of an inch. The cellular tissue having been

cleared from the inner upper wall of the orbit by means of a blunt dissector and the nerve located at the anterior ethmoidal foramen, the latter was separated from the artery and divided close to the foramen, about a quarter of an inch of the nerve being removed. Resection of the nerve on the left side was carried out four weeks later. This patient was entirely cured of hay-fever, intermittent attacks of coryza and asthma, from which he had suffered for fifteen years.

EXCISION OF THE RECTUM FOR CANCER.

WILLIAM C. LUSK (*Surgery, Gynecology, and Obstetrics*, August, 1908) has contributed a profusely and admirably illustrated monograph dealing with the anatomy of the structures involved, and discusses in detail the various operative procedures, with the indications, advantages, and disadvantages of each. Kraske's operation as described by himself and detailed in text-books on operative surgery is well known to the profession. The operation as performed by Kraske himself and described by Lusk is particularly interesting; spinal anesthesia was used:

“The patient at the beginning was placed in the right lateral position with hips raised on a cushion. The buttocks were brought to the foot of the table, facing which the operator worked. Left parasacral incision, running diagonally into or just beyond the median line at a point a little behind the anus. The knife was carried rapidly down in the line of the incision, cutting close alongside the sacrum and coccyx until the fascia propria recti was reached beneath the deep muscular structures. The upper part of the coccyx was then grasped between the blades of a bone-cutting forceps and cut across. Through this approach wide retraction could be gained and there was ample room for all the subsequent steps of the operation. The fascia propria recti was then pushed forward for two or three inches from the front of the sacrum, and the space thus made packed with gauze. The operator next put his left index-finger, specially gloved for the purpose, through:

the anus into the bowel, and with it as a guide cut through the fascia propria recti and rectum from behind at a level a little above the internal sphincter, which appeared to be about an inch below the tumor. The division of the bowel was made with short interrupted cuttings, after each of which the edge of bowel above and below was caught up with a heavy silk thread, the ends of which were tied together forming a loop, so that after the bowel was entirely cut across there was a row of traction loops attached to either end by means of which the two segments could be manipulated. A piece of gauze was now placed in the wound over the opening of the distal end to avoid soiling from this source, and for a similar reason a plug of gauze was pushed into the open end of the proximal segment and was held in place by tying together over it some of the opposite-placed traction loops. The wound was now temporarily packed with gauze, while the position of the patient was changed to a dorsal decubitus with hips elevated almost vertically on two or three firm cushions, the thighs being flexed and held by an assistant on either side. This elevation is so high that the portion of the back corresponding to the shoulder-blades is about all that touches the table. The position is one that greatly facilitates the subsequent steps. The left index-finger was now placed in the vagina, and over it as a guide the bowel was dissected free from the posterior vaginal wall, in so doing severing the attachment of the fascia propria recti to the latter on either side, until the cul-de-sac was opened into. The peritoneal opening was enlarged laterally, the anterior peritoneal fold caught up by clamps, and two gauze strips, their ends dusted with a little iodoform powder, were laid through the opening into the peritoneal cavity, one having exit on either side of the bowel. The lateral bowel attachments opposite the cul-de-sac were clamped, evidently at the situation of the middle hemorrhoidal vessels, and then tied and severed. The operator was careful not to raise the bowel very high from off the sacrum. The bowel was severed about an inch above the disease, in

a line through the upper portion of the rectum where the latter had a partial peritoneal covering, so that the cut margin of the proximal segment had peritoneal covering only in front. The division of the bowel above the disease was effected by interrupted cuts, the margin of the upper segment as fast as it was thus liberated being sutured to the distal segment below. The bowel was first opened into anteriorly in the line of division, through which opening the interior of the bowel was cleansed, and then the first stitch introduced, which was placed in the anterior median lines of the two bowel ends. The next stitches were placed one on either side of the first one, and then continued equally on the two sides for about three-quarters of the bowel circumference. All these stitches were tied on the inside of the bowel, and a goodly mass of tissue was included in each grasp of the needle so as to coapt broad surfaces along the line of repair. The stitches were tied as they were introduced. For closure of the remaining quadrant situated posteriorly, the stitches were placed outside the bowel inverting the edges of the mucous membrane. At this situation two rows of sutures were introduced, an outer row supporting the inner, and broad areas were brought together. All the sutures were of strong silk and interrupted. During the suturing together of the bowel ends a strip of gauze was laid in front of the line of suture, and at the finish removed. The two pieces of gauze previously inserted into the peritoneal cavity now protruded through the wound on either side of the bowel and were left *in situ*. The wound was finally packed on either side of and behind the bowel from below upward into the sacral concavity. One stitch brought the upper angle of the wound together. The operation was executed very rapidly and the patient was in no shock."

Lusk gives a singularly clear and practical description of the lymphatics of the anus and rectum, the relation to the ureters, and the invasion of the bladder. Thirty-four admirable drawings are contributed illustrating the surgical anatomy of the operative procedures.

Lusk proposes a retrorectal approach which does not mutilate the nerves, renders access to both sides equally easy, provides for good drainage, and should permit of the performance of all operative procedures that ought to be done by this route. It contemplates the production of a broad rather than a high exposure of the rectum. If it be conceded that the removal of a high rectal growth with ligaturing of the superior hemorrhoidal vessels and handling of the sigmoid colon should not be attempted entirely from below, the operative procedures for which the posterior route should be used would seem to resolve themselves into those for (a) completion of rectal extirpation in the combined operation, (b) local excision of an ampullary growth not necessitating the ligature of the superior hemorrhoidal vessels, (c) bowel anastomosis above the anus, and (d) drainage.

The proposed approach is illustrated by admirable dissections. The technique is given as follows:

With the patient on the left side, an incision is made in the median line from the fourth sacral vertebra to the upper part of the coccyx; then it turns diagonally over the right edge of the coccyx, avoiding the attachment of the external sphincter at its tip, and enters the fat of the ischio-rectal fossa, after which it is continued superficially downward and a little outward to the right, parallel with and a little external to the fibers of the external sphincter, to terminate for the moment at a point just lateral to the posterior margin of the anal canal, which point is directly opposite the site of entry of the inferior hemorrhoidal nerve branches into the external sphincter, lying about one inch beneath the skin surface. To avoid injury to these nerves in dividing the deep tissues, the finger first finds the anal fascia by dissecting through the fat in the angle at the tip of the coccyx, between the gluteus maximus and the external sphincter, and then by pushing along the anal fascia downward toward the anus, splits off the ischio-rectal fat until cleavage is arrested by restraining tissues. After division of the latter, the nerves may be exposed by first

stripping forward along the fascia covering the external sphincter, beneath which the nerves lie, and then dissecting vertically upward through this fascia in the course of the nerves themselves, which latter may be made prominent by downward traction on the sphincter. An arched skin incision is made across the summit of the longitudinal one, and the skin flaps thus outlined are reflected a sufficient distance from the surface of the glutei maximi muscles to allow lateral splitting and retraction of the deep structures.

The further steps of approach to the rectum through this opening of entrance depend upon whether disarticulation is to be made at the sacrococcygeal joint, or transverse osseous division through the sacrum just below its inferior lateral angles. If the former, the attachment of the right gluteus maximus fibers to the right edge of the coccyx is first severed. The finger can then be hooked beneath the tip of the coccyx to move the bone, thereby discovering the site of its articulation with the sacrum. Then disarticulate the coccyx, dissect it from its anterior connections approaching from the right side, and swing it to the left on the uncut tissues of the left side as a hinge, or remove it entirely. Just in front of the coccyx is a dense structure in which lie the terminations of the sacra media and lateral sacral arteries, which vessels can be preserved from injury by dissecting close to the anterior surface of the bone. This precoccygeal structure, triangular in outline, above has a close attachment to the front of the sacrum, laterally on either side receives the insertion of fibers of the coccygeus muscle, and below supports the median aponeurosis uniting the levatores ani. Its transverse division is of importance to relieve the restraint to lateral retraction of the flap exercised by it in conjunction with the tough median aponeurosis between the levatores ani.

The deep muscular incision is now made, which opens the right posterolateral rectal space. In making this incision the dense structure in the bottom of the space from which the coccyx was removed and the

fascia underlying it should be cut through first, and then the finger introduced through this opening into the right posterolateral rectal space, in a downward direction raises the right levator ani for severance and in an upward direction separates forward the rectum and its covering or fascia propria from the front of the lesser sacrosclatic ligament until it reaches the attachment of the latter to the inferior lateral angle of the sacrum. At the latter situation the margin of the bone is thinned and curves around below the fourth sacral foramen, forming the base line of the lateral mass, which is dissected transversely and is the guide to the upper limit of the incision. Below the level of the lateral sacral angles a narrower terminal portion of the sacrum, consisting of a fifth sacral vertebra body and sometimes the lower portion of the fourth, usually projects downward an inch or more, along either side of which are attached fibers of the gluteus maximus muscle, part of the lesser sacrosclatic ligament, and part of the coccygeus muscle with the fascia underlying it, which structures are the ones divided by the incision. When the incision has been completed, starting at the upper limit of severance opposite the lower margin of the right lateral sacral angle, the deep structures are then split outward toward the spine of the ischium, and the flap thus freed is pulled to the right, thereby opening widely the right posterolateral rectal space. In the lateral splitting of this deep flap as the lesser sacrosclatic ligament is cut, the greater sacrosclatic ligament is met crossing it obliquely, which should not be severed, but instead should have the fibers of the gluteus maximus cut from its posterior surface. In making the portion of the deep incision through the right levator ani, the line of division passes into the right ischio-rectal fossa and can be carried together with the skin incision beyond the line of the inferior hemorrhoidal nerves, if the latter have first been dissected out for their avoidance. The left posterolateral rectal space is now entered by pushing the finger from the right space across to the left side at a level just below the tip of the

sacrum, and then, hooking the finger downward into the left space, the median septum is raised on it and divided, thereby throwing the two spaces into one. The dense tissue forming the floor of the area from which the coccyx was removed is then divided, catching the terminations of the sacral vessels lying in it, and from the left extremity of the sacrococcygeal joint the gluteus maximus and coccygeus muscles with underlying fascia are split laterally to the left, thus affording as wide access to the left posterolateral rectal space as can be gained at this level, and completing this method of exposure of the rectum from behind.

Transverse osseous division through the sacrum just below its inferior lateral angles, with lateral splitting of the soft parts on both sides at the same level, can be made in order to gain a higher and broader exposure of the rectum than can be obtained by resection of the coccyx alone. This higher exposure can be accomplished either as a later step to the approach shown, or else preferably, without preliminary disarticulation of the coccyx, right after making the deep vertical incision, but here necessarily skirting the coccyx. The division of the bone is made with an osteotome directed transversely, in doing which hemorrhage from the sacral vessels is avoided by prying off the severed segment of bone from the dense periosteum attached to its anterior surface, and then cutting carefully through the latter membrane until a loosely attached tissue immediately in front of it is reached, where the vessels are found and can be readily caught and severed.

Choice of Retrorectal Approach.—The Kraske approach with simple disarticulation of the coccyx, or with the removal in addition of a widely projecting inferior lateral angle of the sacrum below the third sacral foramen, is the preferable procedure when practicable, and would probably suffice in all female cases with broad pelvic outlets. A parasacral incision through the soft parts, with Hochenegg's method of bone removal cutting the sacrum across in a line below the left third and right fourth sacral fora-

mina, would probably be most often applicable in the case of males with outlets of limited size in whom the sacra are of the type having a narrowed lower extremity projecting well below the lateral sacral angles. To the latter class of cases the herewith proposed retrorectal approach would also seem to be particularly applicable. Transverse section of the sacrum below the third foramen would seem to be inevitable in males where there is no projecting central bony extremity below the level of the inferior lateral angles.

THE PROGNOSIS OF SYPHILIS.

In an editorial comment upon this topic the *Medical Record* of July 25, 1908, quotes Waldvogel and Süssenguth's statistics having to do with 297 patients treated for syphilis in the Göttingen clinic from 1873 to 1882, and concludes as follows:

The results are of interest in one respect at least: evil consequences have not at all been as frequent in this series of cases as is usually thought to be the rule by both medical and lay men. No predisposition to tuberculosis seems to have followed syphilitic infection, the number of deaths from this cause being less than the one in three which is the usual rate of mortality from it, according to the data of the German Health Office. Seven patients were affected with tabes dorsalis, and three of them died from this disease. Eleven deaths, or 9.3 per cent of the total 118 deaths, were due to progressive paralysis, three other patients being still alive, though suffering from this supposed sequel of syphilis. The general mortality of the patients when compared with the life insurance figures for the proper age appeared to be higher by 9 per cent; moreover, the average loss-of-life expectation was two years per person. Almost none of the patients gave any history of tertiary symptoms, and at least 109 of the 297 patients recovered good health after the treatment, consisting of inunctions, and sometimes of injections, of mercuric preparations; while another dozen were suffering from various heart, kidney, and lung

lesions that could not be looked upon as resulting from the old syphilitic infection.

So far as the immediate victims of specific disease are concerned, these figures little justify the usual view of luetic infection as carrying with it a greatly increased morbidity and mortality. The disease, however, is especially characterized by the damage it does to the descendants of the patients, and the authors whose work we are considering have tried to obtain some data of this aspect of the subject. Of the 265 patients with secondary symptoms, 48 remained single, a percentage which is quite high, considering the rural character of the population treated. The marriages, however, did not seem to have been any less fruitful than the average shown by life statistics. Further figures in reference to other points involved could not be obtained or were based on too few cases to be of general application. One thing seems to be shown by the careful statistical tables of the authors: so far as the material studied by them is concerned, syphilis is no such fateful disease as is usually thought. The comparison with the results of the same infection among town dwellers, as well as the influence of race and country upon the prognosis, would well repay the trouble of any one who has sufficient material open to him for such a study.

LUPUS ERYTHEMATOSUS.

KANOKY (*Medical Record*, Sept. 12, 1908) characterizes lupus erythematosus as a chronic inflammation of the skin, characterized by scaly patches, usually rounded or oval in outline and reddish in color, which are generally followed by scars. These patches may be discrete or confluent, and the face, especially the nasal bridge and upper cheeks, is the region most frequently involved.

The disease may be circumscribed or disseminated. In the former it begins as a small, slightly elevated flat top papule, the bright-red color of which does not completely disappear on pressure. It enlarges peripherally until an infiltrated, scaly patch, varying from one to several centimeters in

diameter, results, the slightly depressed center of which is studded with the openings of dilated follicles. The scales are of a light-yellow or dirty-gray color and can be removed by slight friction. The surface of the affected area is always dry, pinkish or reddish in color, and never ulcerates. At times, after months or years, it exhibits a tendency to spontaneous involution, leaving a soft, flexible, atrophic scar, the surface of which is marked by the patulous mouths of enlarged sebaceous ducts. A frequent clinical picture is the so-called "butterfly" or "bat's wing" marking, the patches on the upper cheeks having become confluent with a narrow band extending over the bridge of the nose.

The scalp is quite often attacked, permanent loss of hair over the affected area resulting. In this locality the scaliness is less marked and the borders are more elevated than on other parts of the body.

The disseminated variety is rare. The inflammation is more acute in character and is accompanied by constitutional symptoms similar in character to those of erythema multiforme. Vascular or even bullous lesions are seen, and the prognosis is extremely grave. Tubercle bacilli have never been found in these lesions. The distinction from acne rosacea is based on the smooth and glistening surface of this lesion, dilated capillaries, the irregular, ill-defined outline, and the predilection it exhibits for the tip of the nose.

Chronic eczema is seldom if ever dry at all times. Itching is more or less intense; the mouths of the sebaceous ducts are not patulous and do not contain the greasy plugs seen in lupus erythematosus, and there is no formation of cicatrices. The non-ulcerating syphilide is characterized by nodular tubercles with a small depressed oval or pigmented scar; it is rapid in evolution, and there are no dilated follicles. Lupus vulgaris is particularly characterized by the presence of the "apple-jelly" nodules, best seen when the areas are examined through a closely applied diascop; the rough, fibrous scars, and the extensive ulceration and tissue destruction are sufficient

for recognition. In case of doubt the tuberculin reaction or a biopsy will serve to make clear the diagnosis. There is no specific remedy, and many advised are useless. The milder methods and preparations should always receive the first trial. If there is much irritation or hyperemia, a soothing application, such as zinc oil (zinc oxide 60.0, olive oil 40.0), or calamine lotion, should be employed for several days, meanwhile administering salicin internally.

If the lesions are non-inflammatory, pale, and anemic, they must be painted with a strong iodine preparation, repeating it three times each week, and administering the salicin internally. Here the latter may be alternated with quinine, or the cinchona salt substituted altogether.

Where the induration is marked and the condition notably sluggish, agents possessing marked stimulating power are indicated. Salicylic or pyrogallac acid, suspended in collodion, is desirable.

Rx Acid. salicylic, 40.0;
Acid. pyrogallac, 10.0;
Collodion, 100.0.

The Roentgen ray is not nearly so valuable here as in true lupus, and the arc lamp of Finsen has also proved disappointing. The liquid-air treatment recommended by Fox, Dade, and others would seem an excellent procedure, and the use of carbon dioxide snow even better and more practical. Under the treatment above outlined excellent results may be obtained in a large percentage of cases, especially if the affection is seen early.

DEFERRED OPERATIONS FOR INTRA-ABDOMINAL HEMORRHAGE DUE TO TUBAL PREGNANCY.

SIMPSON (*Surgery, Gynecology, and Obstetrics*, July, 1908) submits four propositions as indicating the line of thought which his paper embodies: (1) Extra-uterine pregnancy is always a grave affection, and operation should usually be done at the earliest elective period and under elective conditions. (2) It seems within the range of possibility that, by a readjustment of

teaching regarding early symptomatology and prognosis, the vast majority of the cases may be recognized and appropriate treatment instituted during the non-tragic, which is the safe stage of the disease. (3) Operation when the patient is acutely ill is always serious. This is particularly true if the operator be unskilled or the surroundings unfavorable. (4) A consideration of the general subject of hemorrhage, the writings of many operators, and his personal experience lead the author to believe that intra-abdominal hemorrhage due to ectopic gestation does not necessarily have as high a mortality as prevalent teaching would indicate.

These propositions he elaborates into a forceful argument and illustrates by clinical reports. The following are his conclusions:

Extra-uterine pregnancy is always to be looked upon as a serious affection, though not necessarily immediately fatal. In substantiation of this fact he submits one hundred consecutive cases without mortality from hemorrhage.

It usually requires operation. Pending that procedure the patient should be handled with extreme care.

Operation when a patient is acutely ill is always serious. This is particularly true if the operator be unskilled or the surroundings unfavorable.

The decision for immediate operation is at times entirely proper, but it should rest upon a low mortality for such operations in the individual operator's hands, rather than on the essentially high mortality the disease has been credited with having.

TEN CASES OF PERFORATION AFTER GASTRIC ULCER.

MORTON (*Bristol Medico-Chirurgical Journal*, September, 1908) has operated on ten cases of gastric perforative ulcer, with three recoveries. He notes that after the sudden violent onset there is often a latent period which may be deceiving. He observes that in two of his cases appendicitis was diagnosed, calling attention to the fact that in 19 out of 51 such cases of duodenal per-

forative ulcer collected by Moynihan a diagnosis of appendicitis was made. Moynihan attaches most importance to rigidity of the abdominal wall, though in one case in which there was general peritonitis there was neither rigidity nor tenderness, the patient being profoundly collapsed. It is noted that sharp abdominal pain, vomiting, distention, and collapse may occur at the beginning of menstruation and may closely simulate perforating gastric ulcer. The pelvis should be examined in all cases, if not by a separate opening, at any rate by inserting into it a sponge on a holder. If fluid is found suprapubic drainage should be practiced. The right kidney pouch and the left loin can both be drained by long split tubes with gauze wicks from the anterior abdominal wound, but in some cases of very extensive infection of one or other loin a counter-opening may be advisable. Drainage is practiced in every case. All of Morton's cases were anterior perforations.

AURAL COMPLICATIONS OF INFLUENZA.

MOLE (*Bristol Medico-Chirurgical Journal*, September, 1908) notes that in adults influenza is one of the commonest causes of suppurative otitis. Influenzal otitis media may also be non-suppurative, characterized by pain, congestion, and deafness, and relieved by antiseptic sprays or irrigations to the nasopharynx, instillations of a few drops of warm carbolyzed glycerin into the meatus, and hot dry applications over the ear. A brisk aperient should also be administered. This is followed by inflation of the middle ear on the subsidence of inflammation. A sequel to this non-suppurative otitis is chronic adhesive middle-ear catarrh. Suppurative otitis media of influenzal origin is a hyperacute process, often characterized by hemorrhagic blebs on the drum and on the deeper part of the meatus and by extension to the mastoid process. Intense pain and deafness are characteristic features, nor is the pain necessarily relieved when the drum bursts, or has been incised, thus differing from other forms of suppurating middle-ear

trouble. Bulging of the drum should be treated by free incision of the membrane from top to bottom behind the handle of the malleolus.

After incision the ear should be cleansed, dried, and packed down to the perforation with a strip of moist antiseptic gauze as often as is necessary. When the patient's friends have to carry out the treatment irrigations of warm boric lotion are advisable. Where drainage is freely provided after this treatment it is usually efficacious. If healing is sluggish, boric acid instillation is employed or carbolic acid and glycerin 1 to 10 is instilled after the ear has been cleansed and dried. A small spontaneous perforation should be enlarged by incision. Irrigations and syringing are practically useless unless this be done. After the perforation is firmly healed a course of instillation through the Eustachian tube is desirable.

If after three weeks of drainage there is no evidence of healing, it is obvious that either the drainage is inadequate or the mastoid process is involved. Under such circumstances the antrum must be opened and drained and the tympanic cavity washed out by this route. A persistent tenderness for the first few days, with no abatement of the discharge, with or without swelling and with edema over the mastoid process, indicates operation without delay. Usually it will be needful to remove the whole of the outer cortex from apex to antrum. In cases of influenzal deafness due to neuritis of the auditory nerve, or changes in the labyrinth, strychnine either hypodermically or by the mouth represents the best treatment.

ESOPHAGOSCOPY.

FULLERTON (*Glasgow Medical Journal*, June, 1908) states that this procedure will never become very general or popular because it involves time and care, and cases requiring its aid are comparatively few in number. Credit for devising the first instrument is given to Bozzini, who in 1807 predicted a great future for his endoscope. The tube should be provided with a scale of centimeters or inches beginning at the lower

end so as to indicate the distance of the tube in the gullet. There are three important measurements which are taken from the edge of the upper incisors—to the cardiac end of the stomach, 40 centimeters ($15\frac{3}{4}$ inches); to the bifurcation of the trachea, 26 centimeters ($10\frac{1}{4}$ inches); to the upper border of the cricoid cartilage, 15 centimeters (or 6 inches). The esophagus is normally constricted at these three points, the narrowest being that met with at the cricoid.

On examination the stomach should be emptied. An anesthetic is usually required only in the case of children. Local anesthesia is sufficient, and for this purpose, under guidance of the laryngeal mirror, a 10-per-cent solution of cocaine is painted over the posterior pharyngeal wall, epiglottis, opening of the larynx, and posterior cricoid region. It is well to pass the cocaine-saturated swab into the upper end of the esophagus and allow it to remain for a short time in that position.

Esophagoscopy may be undertaken in three different positions: The patient sitting on a low stool, with the neck extended and head thrown back, and held in that position by an assistant who stands behind the patient. Here the tube is best passed backward, under the guidance of the index-finger of the left hand, which is placed on the base of the tongue, so as to pull the tongue and larynx forward. This position is unsuitable where there is a copious flow of saliva, as is usually the case when a stricture is present.

The recumbent position must be adopted when the examination is prolonged, or when a general anesthetic is used. And here we can either use Mikulicz's lateral position or that with the patient lying supine with his head over the end of the table and supported by an assistant. It should be borne in mind that the gullet after passing through the diaphragm turns sharply to the left and forward, in which case the passage of an instrument into the stomach will be facilitated by having the patient lie on the right side. It is best to pass the tube over a well-fitting, flexible bougie, after both have been

warmed and lubricated with vaselin and the head placed in such a position as to form as near as possible a straight line from the run of the gullet to the upper incisor teeth. If the mischief is seated far down, three or four inches of the bougie may be allowed to project beyond the end of the tube, and holding both like a pen, and in such a way that they cannot move separately, they may be introduced directly without the intervention of a finger. Thus guided the tube in many cases follows with ease. It is often an advantage to approach by the left pyriform sinus. The tube is passed for 10 centimeters, and the patient is then asked to swallow. By this act it is usually carried down 14 to 16 centimeters—i.e., to the cricoid. At this point the patient is allowed to breathe quietly for a time, then is asked to again swallow, when without force it can be guided down past the constriction.

Having once passed this, the narrowest part, the pilot bougie may be removed, the tube carefully pushed forward under guidance of the eye, and in this way the walls of the esophagus are gradually brought into view and examined before being disturbed. The mucous secretions of the stomach present in the tube must be washed out, pumped out, or mopped away. Difficulty in passing an instrument is usually due to spasm of the inferior constrictor, or to having the head thrown back too far. In the former case steady pressure is sufficient, and at no time should force be exercised. In the case of impacted foreign bodies the tube is especially useful by enabling us in many cases to effect their removal without recourse to the comparatively dangerous operation of esophagotomy. It should be employed early before any other instrument has been passed.

REVIEWS.

PULSATING EXOPHTHALMOS. By George E. de Schweinitz, M.D., and Thomas B. Holloway, M.D., Instructor in Ophthalmology in the University of Pennsylvania. W. B. Saunders Company, 1908.

This monograph of 125 pages, with its graceful dedication to "The Surgical Staff of the Hospital of the Medical Department of the University of Pennsylvania," presents in an attractive form the principal facts concerning pulsating exophthalmos. A knowledge of these facts is of great interest and importance to the surgeon and the ophthalmologist. The preface states that "the object of the essay is to compare the therapeutic measures, surgical and otherwise . . . and to endeavor to determine from these analyses those surgical procedures which seem likely to prove of the greatest advantage in the control of the symptoms."

The number of cases collected from the literature which have not been hitherto collated is 69 (80 in all, of which 11 are doubtful or atypical), sufficiently large to draw safe deductions and to establish rules of

treatment to be followed in the management of cases in the future.

The most frequent cause of pulsating exophthalmos is a communication of the internal carotid artery with the cavernous sinus. The less common causes are aneurism of the internal carotid and aneurism of the ophthalmic artery, and tumors of the brain which have found their way into the orbit, and tumors originating in the orbit. The disease is usually traumatic, but may be spontaneous. The symptoms—exophthalmos, pulsation, bruit, venous swellings adjacent to the globe, and tortuosity of the lid veins—are well known. The authors lay stress on the "bruit de pialement," which manifests itself as "a rather musical murmur with a high whistling tone, demonstrable in some cases and doubtless overlooked in other instances, probably on account of its intermittent character." It is believed by some writers to be characteristic of arteriovenous communication. In the section on treatment, which after all is the

practical side of the interesting topic, are considered: (1) Ligation of the larger blood-vessels of the neck: 34 ligatures; cured or improved 17, recurrence 8, negative results 6, deaths 4. (2) Operations upon the orbit: 7 cases of operation upon the superior ophthalmic vein have been reported since 1897, and "in view of the uniformly successful results it would seem that this procedure should be considered before ligation of the carotid, and certainly should precede ligation of the second carotid." (3) Compression of the common carotid: 12 cases with one cure and 3 improved. (4) Direct compression of the venous swelling in the eyelids and angle of the orbit: 3 cases without satisfactory results. (5) Gelatin injections: 3 cases and one cured. (6) The administration of certain drugs and rest in the recumbent posture: 6 cases and one cure by potassium iodide and adrenalin.

The last 50 pages are devoted to tables of details of 80 cases arranged according to the date of publication of the articles describing them, and finally an index.

An admirable feature of the book is the references to the literature. The bibliography is complete, and hence the work is valuable not only as a perfect description of the disease but as a reference book.

H. F. H.

DISEASES OF THE SPINAL CORD. By R. T. Williamson, M.D., F.R.C.P. Henry Frowde, The Oxford University Press, London, 1908.

Dr. Williamson is known to many American physicians who are interested in neurology because of his clinical contributions to this subject, and also because of the valuable summaries of neurological literature which he contributes from time to time to the *Manchester Medical Chronicle*.

The present book is an excellent summarization of the subject of which it treats. The first part is devoted to a consideration of the structures of the spinal cord, and its normal and abnormal histology. The illustrations in this portion of the book are numerous and excellent, both in the sense that they are well executed and that they actually show

what the author is attempting to describe. There are one or two exceptions to this, however, as, for example, Figs. 3A and 3B, which are somewhat blurred in the printing. The diagrams illustrating the tracts and commissural fibers in the cord are unusually good and are in accordance with the latest views concerning this somewhat complex anatomical subject. The third section is devoted to the functions of the spinal cord in health, and the fourth to the symptoms of spinal disease, while the fifth deals with the electrical examination, examination with the x -rays, and lumbar puncture. We are interested in noting that the author believes that lumbar puncture is a valuable aid in diagnosis in many cases, and also recognizes that it is capable of producing dangerous results. We do not think that he gives enough consideration to the diagnostic value of examinations of the spinal fluid, microscopically and chemically, and while he describes the method by which the puncture is to be made, but nine lines are devoted to the bacteriology of the subject, and less than a page to the character of the cells which are found in this fluid. Proceeding from these methods of diagnosis he takes up the diagnosis and localization of diseases of the spinal cord from the standpoint of symptomatology, subjective and objective, and then goes on to a consideration of the diseases causing symptoms of transverse lesion of the cord, those causing atrophic and spastic paralysis, and then those in which ataxia is a prominent symptom, grouping in this class not only tabes dorsalis and degeneration of the posterior lateral columns, but also changes which take place in the spinal cord in severe toxemia, in pellagra, in arterial disease, and in diabetes. The eleventh chapter is devoted to spinal meningitis in its various forms, and after this there is a careful consideration, although a somewhat brief one, of spinal syphilis, and of traumatic affection of the cord. Lastly there is an appendix in which the methods of examining pathological specimens, derived from the spinal canal, are described in limited degree, but sufficiently fully for beginners, or

at least sufficiently fully to make the text clear when descriptions of staining methods are spoken of. The book is one which will prove highly useful to general practitioners in particular and to neurologists as well.

A MANUAL OF CLINICAL DIAGNOSIS. By James Campbell Todd, Ph.B., M.D. Philadelphia and London, W. B. Saunders Company, 1908.

In this book of about three hundred small octavo pages Dr. Todd has presented a clear, though condensed, account of the more important laboratory methods of established utility. Apart from the purely technical descriptions, which are satisfactory, the manual contains a helpful chapter on the use of the microscope, and also a brief commentary, at the end of each section, on the interpretation of the various chemical and microscopic data therein mentioned. While Todd's manual can be recommended as a safe guide for the student who seeks to acquire the essentials of clinical laboratory methods, abbreviated literature of this sort cannot take the place of more comprehensive treatises—but this is not the author's intent, as he states in the preface, and therefore criticism on this score is disarmed in advance.

J. C. DA C., JR.

GOLDEN RULES OF DIETETICS. By A. L. Benedict, A.M., M.D. C. V. Mosby, St. Louis, 1908. Price \$3.00.

The object of Dr. Benedict in compiling this book upon dietetics has been not to provide the active practitioner with a purely scholastic scientific research upon food values but to present scientific knowledge coupled with practical methods in such a way that the physician will find them useful in practice. After dealing first, rather briefly, with the physiological chemistry of foods and the daily needs of the human body, he proceeds to a consideration of the methods of checking diet by weight and excretions, the transmutability of foods and their waste, and then discusses the methods which are employed in predigesting foods. He also discusses preserved foods and methods of cooking. His fourteenth chapter discusses somewhat briefly the purin bodies. Perhaps

the most important of the chapters is the twelfth upon the composition of foodstuffs, and the fifteenth upon the important constituents of foodstuffs aside from proteids, fats, and carbohydrates. He also considers distinctly deleterious foodstuffs and the general hygiene of eating, infant feeding, and diet in the various disorders of nutrition, whether they occur in infancy, in diabetes, or in gout. The remaining chapters of the book are taken up with the diets which are useful in diseases of the various organs, digestive and otherwise, in blood and bone diseases, and diseases of the nervous system and before and after surgical operations.

While the volume does not profess to be anything like as exhaustive and comprehensive as Dr. Gilman Thompson's well-known book upon "Dietetics," the author has succeeded in doing what he started out to do, and has presented us with a valuable little handbook on this important subject, which is not given the attention which it deserves by many physicians.

THE AGE OF MENTAL VIRILITY. By W. A. Newman Dorland, M.D. The Century Co., New York, 1908. Price \$1.00.

The substance of this little book, if not all of it, is reprinted from an article by Dr. Dorland which appeared some months ago in the *Century Magazine*. The object of the writer has been to controvert the view advanced by Dr. Osler that most of the great intellectual work of the world has been accomplished by men under forty years of age. Although the book is small, it reveals an extraordinary amount of research into the minds of well-known men who were eminent because of their mental attributes. The first chapter deals with the world's chief workers and thinkers; the second with the period of mental activity; the third with unusual mental activity in the young; the fourth with the acme and duration of mental activity; the fifth with what the world might have missed; the sixth with genius and insanity, and the seventh with the brain of genius. The book closes with a remarkable table giving the name, the date of birth, the age of beginning activity, the age

of chief activity, the chief work, the age of recession, the duration of mental activity and the date of death, with the years of age at the time of death. It includes astronomers, mathematicians, divines, dramatists, essayists, jurists, naturalists, novelists, philosophers, poets, reformers, satirists and humorists, statesmen, inventors, chemists, explorers, composers, physicians and surgeons, and last of all warriors. If there ever was a small volume of about 200 pages which contained more interesting information and showed more real literary research we would like to be informed of its existence.

THERAPEUTICS: ITS PRINCIPLES AND PRACTICE. By H. C. Wood, M.D., LL.D. Thoroughly Revised and Rewritten by Horatio C. Wood, Jr., M.D. Fourteenth Edition. The J. B. Lippincott Co., Philadelphia, 1908.

The announcement of the appearance of the fourteenth edition of Dr. Wood's well-known treatise on Therapeutics is not only of interest to every practitioner, but in addition will serve to bring back memories of student days to many who have had the privilege of sitting at the feet of this well-known apostle of this department of medical learning. The book is to-day, as it has always been, an exhaustive one, embodying an immense number of quotations from the writings of pharmacologists in all parts of the world, and from time to time pointing out directly the influence which these researches have had, or ought to have, upon the practical application of therapeutics to the cure of disease. Under the skilful editing of the junior author the book has been brought well up to date. We note with interest that in the therapeutic discussion of hyoscine nothing is said of the value of this remedy in the treatment of the morphine habit or in alcoholism. The statement that atropine increases blood-pressure seems to be contradicted by the recent investigations which have been made concerning the influence of this drug, since in all probability it exercises a different effect upon blood-vessels in different portions of the body. These minor criticisms, however, are as

nothing compared to the thoroughness with which the book has been compiled and revised. It will undoubtedly maintain, in its present form, the high place in medical literature which it has filled so ably for more than a generation.

PULMONARY TUBERCULOSIS AND ITS COMPLICATIONS. By Sherman G. Bonney, A.M., M.D. Illustrated. W. B. Saunders & Co., Philadelphia, 1908. Price \$7.00.

This very exhaustive book, which covers nearly 800 pages, has been contributed to medical literature by a physician who for many years has been particularly interested, both personally and in general practice, in the subject of which it treats. It is both interesting and encouraging to note that one who has experienced the touch of the sapping tubercle bacillus should, after a life in a proper climate over a number of years, have been willing and able to produce so excellent and so exhaustive a treatise, for this book deals not only with pulmonary tuberculosis in general and its complications, but has especial reference to the diagnosis and treatment which should be carried out by the general practitioner.

As the author well points out in his preface, it is quite impossible to present an exhaustive treatise upon all phases of pulmonary tuberculosis in a single volume. The work is not designed so much for the benefit of skilled specialists in the treatment of pulmonary disease as it is for general practitioners and students, but although this is the statement of the author, there is much in its pages which will profit the specialist in pulmonary disease if he will give it careful study. The book is illustrated not only with ordinary black-and-white illustrations, but with a number of excellent colored plates which are not only a credit to the author and his publishers but to American lithography as well.

After opening chapters upon the etiology and pathological anatomy of pulmonary tuberculosis, the author proceeds to a historical review and then to a description of the tubercle bacillus and to the methods by which it produces its infection through the

respiratory or alimentary tracts and by other means. He then discusses the development of the disease in different races, its geographical position, and the effect of geographical position upon patients who are infected by it. The pathology of the disease is then taken up, and after this, in Part II, the symptomatology, course and varieties, and finally the termination of pulmonary tuberculosis. Part III contains a discussion of the physical signs. Part IV deals with diagnosis and prognosis, and Part V with complications. Part VI considers the prophylaxis, general treatment, and specific treatment of pulmonary tuberculosis. There are one hundred chapters, and every phase of diagnosis and treatment is carefully discussed. The book closes with personal observations upon the use of bacterial vaccines and with the author's conclusions in regard to their value.

This is by long odds the most exhaustive book upon this subject which has appeared in medical literature in America, and the author deserves hearty congratulations upon the completion of a by no means easy task in a highly satisfactory manner.

ANATOMY: DESCRIPTIVE AND SURGICAL. By Henry Gray, F.R.S. Seventeenth Edition, Thoroughly Revised. Lea & Febiger, Philadelphia, 1908.

This work, which is familiar to almost every one who has graduated in medicine during the last fifty years, has appeared once more, this time under the careful supervision and editing of John Chalmers Da Costa, Professor of the Principles of Surgery and Clinical Surgery in the Jefferson Medical College, and Edward Anthony Spitzka, Professor of General Anatomy in the same institution. These two authors, combining the needs and skill of the practical surgeon with the knowledge and the skill of the technical anatomist, have succeeded in bringing the text of "Gray" up to the present state of anatomy as it exists for the scientist and active practitioner. Although something remains of the original text, the book now represents, as it has always done, modern anatomy in every sense of the word. Particular attention has been

paid to surgical anatomy, to developmental anatomy, and also to the anatomy of the nervous system, both macroscopic and microscopic. So far as we know there has never been a time when it can be said that Gray's Anatomy was not kept up to the mark by a competent editor, but this is the first instance, we believe, in which there has been so fortunate a combination of active surgeon and scientific anatomist in the preparation of a new edition.

PAIN: ITS CAUSATION AND DIAGNOSTIC SIGNIFICANCE IN INTERNAL DISEASES. By Rudolph Schmidt. Translated and Edited by Karl M. Vogel, M.D., and Hans Zinsser, A.M., M.D. The J. B. Lippincott Co., Philadelphia, 1908.

That pain is a manifestation of a large number of the symptoms to which human beings are susceptible is, of course, a well-recognized fact. The present volume is an attempt on the part of Dr. Schmidt to increase our knowledge of the diagnostic value of pain as indicative of the particular area of the body which is affected, and with the aid of the editors and translators he has made a very acceptable presentation of his subject, discussing quite thoroughly the relationship which exists between painful areas and disease in internal organs, and closing the volume with a considerable number of diagrams in which painful areas are shown in contrast to the position of those internal organs which cause the suffering. The book is not, of course, intended for students, but may be read by practitioners with much advantage.

DISEASES OF THE SKIN AND ERUPTIVE FEVERS. By Jay Frank Schamberg, A.B., M.D. Illustrated. W. B. Saunders Co., Philadelphia, 1908. Price \$3.00.

The very large experience which Dr. Schamberg has had in the diagnosis and treatment of the infectious eruptive diseases has prepared him thoroughly for the compilation of this most excellent volume, which is designed for the general practitioner and student rather than for the specialist in diseases of the skin. The illustrations and photoengravings are all of them excellent. The treatment is illustrated by the actual prescriptions which the author thinks ad-

vantageous, and the clinical descriptions of the symptomatology and diagnosis are clear and to the point. Indeed, the book may be considered a model handbook for students and practitioners, and we would like to see it used side by side with standard text-books upon the practice of medicine in every school.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by H. A. Hare, M.D., Assisted by H. R. M. Landis, M.D. Volume III, September, 1908. Lea & Febiger, Philadelphia, 1908.

The present issue of *Progressive Medicine* contains, as has the September issue since this periodical was first issued, articles upon Diseases of the Thorax and its Viscera, Dermatology and Syphilis, Obstetrics, and Diseases of the Nervous System. The first is written by Dr. William Ewart, of London; the second by Dr. W. S. Gottheil, of New York; the third by Dr. Edward P. Davis, of Philadelphia, and the last by Dr. William G. Spiller of the same city. These names are a guarantee of the fact that the articles are prepared by authorities in their various departments, and that they are written by men in active practice who know what the general practitioner is most interested in.

A TEXT-BOOK OF NERVOUS DISEASES AND PSYCHIATRY. For the Use of Students and Practitioners. By Charles M. Dana, A.M., M.D., LL.D. Seventh Edition. William Wood & Co., 1908.

Those who are familiar with the earlier editions of Dr. Dana's exceedingly popular Text-book of Nervous Diseases will note the very material increase in size which has taken place since the first edition was presented to the medical profession. The seventh edition has been chiefly changed in that the author has brought up its articles to such a position that they are side by side with neurology as it exists to-day. When the first edition appeared little could be said in regard to the finer anatomy of the nervous system in the sense in which it has been developed during the last ten years, but even at that time Dr. Dana's book separated itself from most other works upon the same sub-

ject in that he took pains to describe as far as possible the minute anatomy of the structures involved in nervous disease. He has added something in the present edition upon psychotherapy and certain mental states, and has added a good deal to the subjects of neuritis, tabes, multiple sclerosis, and brain tumor. A number of the old illustrations have been taken out and new ones substituted. The book stands to-day, as it has been always, a credit to American medical literature, and one of the best, if not the best, of the medium-sized works in any language upon this important subject.

AN ALABAMA STUDENT AND OTHER BIOGRAPHICAL ESSAYS. By William Osler, M.D., F.R.S. The Oxford University Press, London, 1908.

To those who are familiar with Dr. Osler's volume of essays entitled "*Æquanimitas*" it will be gladsome news that he has presented us with another volume of essays on somewhat similar lines, although in this instance the entire book is strictly biographical. We confess that we do not see as much to admire in the Alabama student, whose career gives title to the book, as in some of the other lives which Dr. Osler discusses, notably that of Beaumont, Harvey, and Oliver Wendell Holmes. Perhaps the most interesting to the average reader will be the biography of "Thomas Dover, Physician and Buccaneer," who has come down to modern fame as the originator of Dover's powder. All of these essays have heretofore been published in various magazines, chiefly the *Johns Hopkins Hospital Bulletin*, and are therefore not new contributions to medical literature. They show Dr. Osler's skilful touch and command of medical literature and classical literature as well. The tribute which he pays to Alfred Stillé and the essay upon "The Influence of Louis on American Medicine" are particularly interesting to American physicians. Indeed, the greater portion of the book deals with American physicians and their doings rather than with those upon the other side of the water, which is natural in view of Dr. Osler's early career in Canada and the United States.

AIDS TO TROPICAL MEDICINE. By Gilbert E. Brooke, M.A., L.R.C.P. William Wood & Co., New York, 1908. Price \$1.00.

The so-called tropical diseases have been brought so much nearer home by the extension of the territory of the United States to Hawaii and the Philippines that they possess far more interest to American physicians than they did a few years ago. This little volume, which only covers about 165 pages, and which is small enough to be slipped into the pocket of an ordinary jacket, discusses most of the tropical diseases which are commonly recognized at the present time in a way which will probably prove exceedingly useful to students who attend lectures upon this subject, and also to physicians who are going up before examining boards prior to taking medical service in the Army, Navy, or Marine Hospital Service. The descriptions which are given are necessarily exceedingly brief, but usually adequate. The volume cannot take the place of more complete ones, such as that of Sir Patrick Manson or that of Scheube, but can be well employed for "brushing up."

AIDS TO OPHTHALMOLOGY. By N. Bishop Harman, M.A., M.B., F.R.C.S. Fourth Edition. William Wood & Co., New York, 1908. Price \$1.00.

The previous editions of this little book have been prepared by Mr. Jonathan Hutchinson, Jr. This, the fourth, is taken up for the first time by Mr. Harman, who speaks in his preface of the fact that it has already proved exceedingly popular for the class of persons for which it was designed. The fact that Jonathan Hutchinson, Jr., compiled the first edition is impressed upon us by reason of Fig. 31, in which the so-called notched teeth of hereditary syphilis are shown, which is somewhat remarkable in a little book devoted to the eye. This is probably due to the well-known interest which Mr. Hutchinson's father has always had in teeth having this formation, the so-called "Hutchinson teeth," upon which, in these days, physicians are not inclined to place the importance that they did at that time, so far as their diagnostic value is concerned. The opening pages deal with the examination of

the eye and eyelid, and then the diseases of various portions of the eye are discussed, including the disorders and diseases of the extraocular muscles, closing with the eye conditions of schoolchildren. Quite a copious index concludes this little volume, which is, however, too limited in scope to be used as a text-book.

THE BABY: ITS CARE AND DEVELOPMENT. By LeGrand Kerr, M.D. Albert T. Huntington, Brooklyn, 1900.

Dr. Kerr, who has already contributed a much more pretentious volume to medical literature in the shape of a book upon the diagnostics of the diseases of children, has prepared this little manual for mothers and prospective mothers, and has endeavored to carry out that difficult task in which the author must give sufficient advice without giving too much. He tries to avoid trespassing upon the duties of the physician. The book, like other books upon the same subject, deals with the hygiene of infancy, the methods of rearing the child, and the way in which it should be nursed and fed in the different months of its life up to two years of age. It concludes with a good chapter on artificial feeding, with the management of the sick child, with a "dietary" in which a number of food preparations are described, and with recipes for their preparation included.

HYGIENE FOR NURSES. By Isabel McIsaac. The MacMillan Co., New York, 1908. Price \$1.25.

Naturally enough this volume is not of particular interest to physicians, although it contains much which physicians necessarily order the nurse to do. Copious quotations are made from the standard works upon hygiene and dietetics. For the class for which it has been prepared it is entirely adequate and can be commended.

A VADE-MECUM OF TREATMENT. By Edward C. Seufert, M.D., and John Stuart, B.A., M.A. W. T. Keener & Co., Chicago, 1908.

This little book is an attempt, the authors tell us, at utility rather than originality. Indeed, they think that in therapeutics "originality is justly regarded with a con-

siderable degree of suspicion," and perhaps they are right. In the discussion of the treatment of each malady they have given a prescription such as they think is useful to meet the condition which exists, but they recognize the limitations of therapeutics. Information is also given in regard to the treatment of tropical diseases, such as are met with in Cuba, Porto Rico, the Philippines, Panama, and Hawaii. While we cannot subscribe to all the advice which is given, most of it can be said to be very good. The subjects are arranged alphabetically, so that the first condition discussed is "Abortion," and the last ones "Yellow Fever" and "Poisoning with Zinc Salts."

GREEN'S ENCYCLOPEDIA AND DICTIONARY OF MEDICINE AND SURGERY. Volume IX. William Green & Sons, Edinburgh and London.

We have already reviewed in terms of high praise the preceding volumes of this excellent encyclopedia. The present volume extends from the word "Rhinolith" to "Thermotaxis," and as the alphabetical order indicates, brings the series almost to a conclusion. The author, Dr. Ballentyne, is to be congratulated upon the skill with which he has carried through a difficult piece of editing, and as the most recent encyclopedia upon this subject it can be cordially commended to those who wish to possess an exhaustive work on medical topics.

CONSUMPTION: ITS PREVENTION AND CURE WITHOUT MEDICINE. By Charles H. Stanley Davis, M.D., Ph.D. Second Edition, Enlarged. E. B. Treat & Co., New York, 1908. Price \$1.00.

The ready sale of the first edition of this book has caused the author to carefully revise the present volume. The book is designed more for patients suffering from tuberculosis and for the friends of such patients than for physicians. It deals in a clear way with the modes of onset of the disease, with the hygiene, and the life that a tuberculous patient should lead, including his diet and fresh air. It also discusses the important question of marriage in this class of patients.

The chapter upon the symptoms and diag-

nosis of tuberculosis is, of course, a difficult one to write, since it is impossible for a layman to arrive at a correct diagnosis in many cases, and some of the things that are said might perhaps cause unnecessary alarm. The statement that if a correct diagnosis is made in the early stages of the disease we can almost certainly bring about complete arrest is one which applies only to a certain number of cases, and while advantageous in that it encourages the invalid, may produce bitter disappointment and reflect seriously upon perfectly competent physicians. We are glad to see that the author is opposed to the use of the tuberculin test in diagnosis, as this position should certainly be maintained in a book which is designed largely for the laity.

THE LAW IN GENERAL PRACTICE. Some Chapters in Every-day Forensic Medicine. By Stanley B. Atkinson, M.A., M.B., B.Sc. London: Henry Frowde, Oxford University Press, 1908.

The author states in his preface that it is sometimes said that medical students learn many things which they will never need in subsequent practice, and in subsequent practice learn many things which as students they never learnt, and he has prepared this little book with the object of meeting the latter fault. After some preliminary statements concerning "cautions and precautions," he deals with medical evidence and medical witnesses, with medical statistics and reports, with the law of defamation in relation to medical practitioners, with negligence and malpractice in medical practice, with coroners' cases and limitations of medical evidence. Physicians in general have so little conception of the position which they hold in relation to the law, whether they are practicing their profession or testifying in court, that this compilation of medico-legal facts fills a very distinct want.

THE CURE OF RUPTURE BY PARAFFIN INJECTIONS. By Charles C. Miller, M.D. Oak Printing Co., Chicago, 1908.

This brochure of 80 odd pages, based apparently on an experience of ten cases, lauds paraffin as a method of curing hernia because of the simplicity of the procedure and

because it can be carried out in the physician's office, the patient returning home immediately after his treatment. Miller states that hospital surgeons may be expected to condemn the paraffin treatment of hernia since it will open to thousands of the profession a field which has heretofore been open to surgeons with hospital facilities only. The only preliminary for the successful paraffin injection seems to be what the author calls experimental injections. He advises that the carcass of a small animal should be secured, and that the operator should become expert by making numerous injections into the tissues of this animal and subsequently carefully dissecting it. He exhibits a preference for either a dead cat, rabbit, or chicken. The author states that antiseptics cannot be as freely used upon the hands of the operator as upon the skin of the patient, but believes it is well to scrub the hand with a soap solution which contains formaldehyde and thereafter wash in 70-per-cent alcohol. The further advantage of the author's method is that it is possible to operate on several patients without re-sterilizing the syringe. He further gives the sage advice never to use a syringe which leaks.

The case reports are extremely instructive. The first patient was a female, twenty-eight months old, suffering from umbilical hernia. Four months later it is stated that the overlying skin was somewhat red but not sensitive. There is no mention made as to whether the hernia was or was not cured. It is evident, however, that the patient survived for four months. The next case was a coming three-year-old child, the site of the hernia, as large as a walnut, not being mentioned. The result was admirable, examination two months later showing no recurrence. In a case twenty years old a somewhat inadequate diagnosis of bubonocoele was given; for the after-treatment it was noted that codeine was administered in quarter-grain doses every two hours. The last report from this case is June 25, 1905, two months after operation, the surgeon then finding that there was no impulse.

This book was published in 1908; from the case reports, however, the author seems to have made his last injection August 2, 1906. He has at least proved that paraffin injections, even though they may not cure, are not necessarily fatal.

GLANDULAR ENLARGEMENT AND OTHER DISEASES OF THE LYMPHATIC SYSTEM. By Arthur Edmunds. Hodder & Stoughton, London, 1908.

It is specifically stated that this small volume is not intended as a treatise on diseases of the lymphatic system, but rather is it confined in its scope to the consideration of those pathological conditions in which affections of the lymphatic glands constitute the essential features of the disease. The first chapter is devoted to general anatomical considerations, this dealing also with the minute anatomy. After a general discussion of the principles of diagnosis, cellulitis is taken up with an incidental mention of Ludwig's angina. Thereafter erysipelas is considered, in the treatment of which ichthyol, in 25-per-cent solution, is given the place of first importance. In the treatment of retropharyngeal abscess incision along the posterior border of the sternomastoid muscle is advised, the author stating that it is in these cases that the value of wearing india-rubber gloves is especially seen, since thus the operator can insert his naked finger into the mouth during the first stage of the operation and then put on the glove for the final treatment of the wound. These retropharyngeal abscesses are reached by first dividing the skin; the forefinger of one hand is inserted into the mouth, which is gagged widely open; the surgeon then takes a pair of sinus forceps in the other hand, and by a process of blunt dissection works his way behind the carotid sheath toward the abscess cavity, the position of which is determined by the finger in the mouth.

Under the heading Lymphatic Enlargement and General Diseases, syphilis and bubonic plague are briefly considered. The major part of the book is devoted to tuberculous glands, the vaccine treatment receiving commendation. There is a brief men-

tion of the status lymphaticus, its relation to sudden death and the theories concerning it. Lymphatic insufficiency, filariasis, dilatation of the lymphatic vessels, lymphadenoma, lymphango-endotheliomata, lymphosarcoma, secondary malignant growths, and the treatment of inoperable malignant glands

form interesting chapters in this excellent book. Under the last heading a number of remedies are given, it is true without enthusiastic indorsement, which might have well been omitted. Among these may be mentioned soap and violet leaves. The dose of the latter is 30 violet leaves a day.

NOTES AND QUERIES.

"MR. DOOLEY" ON PSYCHOTHERAPEUTICS.

The following highly amusing communication, appearing in the *Boston Medical and Surgical Journal* of October 22, 1908, is so apropos that we present it to our readers—(Ed.):

CHICAGO, Oct. 16, 1908.

MR. EDITOR: "Have ye read of this new thing they call sycotherapewticks that's privalint in Boston?" asked Mr. Dooley, as he laid aside the daily paper and turned to Mr. Hennessy.

"No. Is it ketchin'?" demanded Hennessy, anxiously.

"Sure it's not a disa-ase at all, at all," replied Mr. Dooley in his most professorial manner. "It's a new rimidy."

"Glory be!" exclaimed Mr. Hennessy. "Is it ha-ard ter swally?"

"Faith, it isn't like Father John's midicine or anny iv thim things," went on Mr. Dooley. "It's this way: Boston is a sthate iv moind, an' whin anny wan sickens there it's th' moind that gits attintion. F'r insthance, whin little Indicutt begins ter pine away an' th' nosepiece iv his specs has ter be thrimmed with fur ter keep th' metal fr'm pressin' on his poor little brain, an' he spinds his nights huntin' th' snark an' ither man-a-a-tein' game in th' heart iv darkest A-africa with Teddy Rosenfelt, thin he's ripe fer sycotherapewticks."

"It's like casther ile, thin," ventured Mr. Hennessy.

"Ye talk like an omadhaun!" snapped Mr. Dooley, impatiently. "It's nawthin' iv th' koind. No, they call in th' pasther iv th' church. 'Ah, me little man, it's obssessed ye

are,' sez he. 'It's a bad case iv th' disso-shiashun iv th' persona-ality ye have,' sez he, an' be a quick pass iv th' hand he lands little Indicutt inter a sthate iv hipno-osis which is th' thrade name f'r a kind iv near-slope. In this condition the poor little divil is complately at th' good man's mercy, an' th' secret wurrukin' iv his moind is as clear ter th' pasther as th' spring waters ye see advertised in th' magazines—if ye believe th' advertoisements. In less time than it takes ye ter impty a can iv beer, Hinnessy, th' boy's moind is spiritooly dhry-clinsed iv its obssissions and th' boy comes back ter airth or as near there as they iver get in Boston. 'Lave him take an exthry coorse in thransindintal ferlosofy,' says th' good man in partin' fr'm th' overjiyed parents. 'It'll kape his attintion off iv himsilf. But be careful how ye expose him ter th' frish air.'"

"It bates th' divil what leps science is makin'!" exclaimed Hennessy, when his powers of speech returned.

"An' they threat th' grown-ups th' silf-same way," went on Mr. Dooley, full of his subject and unmindful of his friend's comment. "Whin wurruk is slac' at th' foun-dhry and th' father iv th' fam'ly doesn't know where th' price iv th' next pot iv baked beans is comin' fr'm, ter say nawthin' iv th' rint an' th' other lux'ries iv life, he begins ter recognize th' simtims iv a refrac-thry subconshus—such as cowl'd feet, an' an inability ter look th' landlord an' th' bo-otcher straight in th' face—an' drops in ter th' sycotherapewtick clinic fer after-noon tea and ither threatmint."

"An' how does that hilp him on th' rint

an' th' bo-otcher question?" asked Mr. Hennessy, critically.

"That's simple," replied Mr. Dooley. "He goes away full of tea, angel cake; an' be-yewtiful sintimints that inable him ter rise above his throubles, and whin th' graspin' landlord an' th' bo-otcher with th' Armour-clad hea-art begin ter do sintry duty before his dhoor in comp'ny with th' ither wolves, th' poor man retires inter th' subcellar iv conshusniss an' puts up th' amnashia shutters, which is a sure protecshun agin painful mimries."

"Wonderful! wonderful!" ejaculated Mr. Hennessy.

"Th' same threatmint applies ter all th' ither human ills," continued Mr. Dooley. "If th' hea-art gets inter a frolicksome mood an' takes ter skippin' beats up an' down th' spine; if th' stummick contrac's th' playful habit iv telescopin' itsilf inter th' dhudeenum; if th' rest iv th' organs refuse ter wurruk undher union rhules, it's sycotherapewticks that's needed."

"But what does sycotherapewticks ra-ally mane?" asked Hennessy, with a dazed expression.

"That's what no wan seems ter clearly undherstan'," replied Mr. Dooley. "As near as I can make out, it's a species iv spiritool flim-flam. We are all born in orig'nal sin, Hinmissy, an' th' divil's in iv'ry wan iv us. Ye may think ter dhrive him out be baptism, but don't fool yersilf. He's still with ye in as manny dif'rnt forms as ye have fingers an' toes. That's why ye suffer fr'm a mooltiplica-ation iv th' persona-ality. Whin th' ould boy gets inter yer liver, ye're wan feller, an' whin he sthrikes yer big toe in th' shape iv th' gout ye're another. Ye know yersilf, Hinmissy, that whin ye go home an' swear at th' ould woman an' caress th' childer with th' wooden ind iv th' broom, ye're not th' same ja-anial spirit ye are whin ye're sthandin' up ter th' bar an' somewan else is orderin'. It's th' divil that's at th' bottom iv all our sufferin', an' it takes th' pasther an' his sycotherapewticks ter dhrive him out."

"An' are there no more reg'lar docthers

in Boston like ould Doc Sullivan here?" asked Hennessy.

"Very few, I hear," replied Mr. Dooley. "Them as haven't made their forchun be thrimmin' off the appendix are now sellin' fairy stories written be spiritool sycollargists."

"But even sthills I don't clearly undherstan' th' meanin' iv sycotherapewticks," protested Hennessy.

"That's just the *crooks* iv the situashun, as they say in argymints. Ye are in the same box as th' pasthers, Hinmissy."

"An' ye say that Boston is on'y a sthate iv moind?" queried Mr. Hennessy.

"I do," affirmed Mr. Dooley.

"Thin it must be an awful bad sthate ter be in," finished Hennessy, sententiously.

Very throoly yours,

J. W. C.

(With humble apologies to Mr. F. P. Dunne.)

Correspondence.

IPECAC IN DYSENTERY AND HEPATITIS.

To the Editor of the THERAPEUTIC GAZETTE.

SIR: I notice in the THERAPEUTIC GAZETTE for September, page 638, that ipecacuanha is extolled very highly as a new remedy in acute hepatitis. The author has surely failed to look up the history and treatment of acute hepatitis following tropical dysentery. By referring to Murchison's Clinical Lectures on Diseases of the Liver, second edition, issued in 1877, page 136, you will find that Murchison recognized the utility of ipecacuanha in hepatitis; also Dr. C. Maclean, in Reynold's System of Medicine, third volume, page 337, recognized its beneficial effects in tropical dysentery and hepatitis following.

I simply call your attention to the fact merely to show that at least some of the newly discovered remedies for old diseases are new only to the later investigators.

Respectfully yours,

THOS. M. WRIGHT.

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ORIGINAL COMMUNICATIONS.

THE PREVENTION, BY OPERATION AND OTHER METHODS, OF RETROVERSION OF THE UTERUS AFTER CHILDBIRTH.¹

BY EDWARD P. DAVIS, M.D.,

Professor of Obstetrics in the Jefferson Medical College of Philadelphia.

Cases of retroversion may be divided into those which are accompanied by retroflexion and those which have no flexion. The former are usually congenital, arising from lack of development, and are often without disease of the surrounding tissues. The latter, cases of simple retroversion, arise from a sudden strain which dislocates the uterus, or injury to those tissues which maintain it in its normal position. As infection often complicates such injury, the tissues surrounding the uterus are infected in these cases. A retroflexed and retroverted uterus, pregnant, requires attention during the early months of gestation. If it does not rise from the pelvic cavity by the end of the third month, the patient should be anesthetized, the uterus brought into the proper position and maintained by a wool tampon. This is important in preventing a return of the retroflexion after labor, for in some cases the development of the uterus during pregnancy corrects the tendency to backward displacement.

Retroversion of the uterus is most apt to follow prolonged and difficult labor, in which the supports of the uterus are over-distended, and in which injury to the tissues occurs. To avoid this every effort should be made during labor to secure a favorable mechanism; remembering that serious laceration follows delivery with the occiput posterior, the obstetrician should secure

anterior rotation. The patient should be placed upon that side toward which the presenting part is directed; if necessary dilatation accomplished by elastic bags; uterine contractions freely stimulated; the forceps should not be applied until engagement is pronounced, molding well advanced, and rotation partially secured. If the head does not engage the case is one for podalic version, if the pelvis is sufficiently large to permit the birth of a living child. If the pelvis is contracted, or the child overgrown, the pelvis must be enlarged, or the child extracted by abdominal incision, or embryotomy performed. The use of the forceps should be under surgical anesthesia to relax completely the tissues most liable to injury.

The immediate repair of lacerations is of great importance in preventing displacement of the uterus. As these cases often occur where an instrument or the hand has been introduced within the uterus, the operator's first duty is to avoid sepsis and hemorrhage. After the delivery of the placenta and its appendages the uterus should be irrigated with lysol 1 per cent, brought into proper position, and thoroughly packed with iodoform 10 per cent sterile gauze. Strychnine and ergot should be given by hypodermic injection to secure good uterine contraction. With these safeguards against infection and postpartum hemorrhage, the operator may proceed to discover and repair lacerations.

Especially likely to be followed by uterine displacement are lacerations of the cervix,

¹Read before the State Medical Society of Pennsylvania, Sept. 17, 1908.

extending to or beyond the vaginal junction into the fascias and connective tissue near the insertion of the uterosacral ligaments. These tears are not discovered without careful examination. In addition to digital search the cervix should be grasped by tenaculum forceps, drawn downward and strongly to one and then to the other side. By retracting the vaginal tissues, such deep and extensive tears can be located. They should be repaired with No. 2, ten- to twenty-day chromicized catgut, inserted by a fully curved needle, especial care being taken to bring together the tissues at the highest point in the tear. This is a matter of considerable difficulty but of great importance. The upper half of the torn cervix may be brought together in a similar manner. As the tear extends along the pelvic floor toward the perineum, it should be closed with catgut, especial attention being given to the lateral sulci. In very extensive tears it may be necessary to use two tiers of suture, the first of finer catgut to remain buried in the bottom of the wound. It is occasionally necessary to twist or ligate with fine catgut bleeding vessels in these deep lacerations.

When the posterior segment of the pelvic floor has been closed, the operator may turn his attention to the anterior segment. This comprises the anterior vaginal wall and the tissues about the urethra. Laceration in this region is not infrequent, and if extensive is accompanied by hemorrhage and by considerable injury to the uterine supports. Such tears should be closed with catgut, care being taken to place a catheter in the bladder and urethra to avoid injury to the urethra, if tears in this vicinity are deep.

When both segments of the pelvic floor have been repaired the operator can proceed to close the perineum. If the laceration has extended into the bowel, especial care should be given to bring together the ends of the sphincter with buried stitches of fine catgut. The bowel should then be closed and the pelvic floor brought together as in other cases. To unite the perineum, stitches should begin at the lower border toward the anus, silkworm-gut being inserted, from

below upward, until the perineal stitches meet those already placed in the pelvic floor.

When the patient is in shock this operation may be postponed from twenty to twenty-four hours after labor.

The effort to perform this operation properly will utterly fail if the patient is on a low, broad bed, if the light is poor, if the operator has not suitable assistance, and if he is not accustomed to surgical technique. A physician who cannot fulfil the necessary requirements should not attempt such repair. If hemorrhage is present he may tampon the uterus and vagina tightly with iodoform gauze, removing this in thirty-six hours and giving one copious irrigation of lysol 1 per cent. If the patient needs repair this must come in these cases as a secondary operation.

Physicians do themselves great injustice in attempting obstetrical operations without proper facilities. If the physician does not care to improvise an operating table, the patient's bed may be raised upon blocks prepared during her pregnancy, and if a narrow bed be used the result is fairly satisfactory. Sufficient assistance should be summoned to difficult confinements to enable the attendant to operate under favorable circumstances, to his own satisfaction and greatly to the benefit of the patient. Those who practice obstetrics must acquire the necessary skill and facility, if they are to do justice to themselves and their patients.

The results of operations for the closure of lacerations in the tissues high in the vagina and about the cervix depend greatly upon the presence or absence of infection. Should this accident occur, only partial, if any, union will follow, and lacerated surfaces become suppurating wounds which must heal by granulation. In cases in which infection develops it is necessary to remove stitches, allowing the parts to open freely for drainage.

In our experience infection has not developed as a result of the closure of these wounds in the manner described. In cases severely infected at the time of labor, or when found infected immediately after labor, we do not attempt to close lacerations

but treat the patient as an infected case. In the experience of myself and those who work with me cervical lacerations requiring suture have healed in 80 per cent of cases, in 10 per cent there has been partial union, and in 10 per cent failure of union. In no case has infection developed as the result of this operation. The results have been sufficiently good for us to follow this method of operating both in hospital and private practice.

The binder can undoubtedly induce backward displacement of the uterus if it be applied from below upward, or worn too tightly and continuously. In treating a relaxed uterus which threatens hemorrhage, the greatest pressure should not be applied directly upon the uterus, but above it by a thick pad placed transversely across the abdomen from the epigastrium downward; this carries the fundus downward and forward against the pelvic brim. The binder should not be used too long, but so soon as the patient's general condition justifies it should be omitted. Where patients can have massage after labor, accompanied by movements of resistance and modified Swedish movements, such treatment forms a most valuable aid in restoring the normal condition of the tissues and preventing displacement.

The time for the patient to get up should be determined by the condition of the individual and not by fixed rule. Patients are usually more comfortable and less likely to throw the uterus backward if they sit in a reclining chair rather than upright in bed. In the chair the patient leans back comfortably and does not strain the abdominal muscles, and there is little or no tendency to backward dislocation of the uterus. Where the patient sits almost erect in bed the posture is much less comfortable and the abdominal muscles are often thrown into considerable tension. In cases in which there is a tendency to retroversion, so soon as the patient can leave her bed she should assume the knee-chest posture from ten to fifteen minutes night and morning. The nurse should take care that the vagina becomes thoroughly distended with air. Con-

stipation and straining in defecation should be avoided.

In aseptic patients in whom the measures already described fail to keep the uterus in proper position, pessaries may be used so soon as the lochial discharge ceases. The kind of pessary will depend upon the conditions in the individual case. A rubber-covered spiral ring is useful in many cases, while in others a retroversion pessary with broad posterior bar gives a better result. Where there is no evidence of inflammation or exudate and the patient tolerates a hard pessary badly, a wool pessary boiled in lysol one per cent may be used instead. These should be made in the form of a bar, which is placed across the posterior vaginal vault, carrying the cervix backward, or if this cannot be retained in position, a large ball tampon may be used. Such pessaries cannot be worn longer than twenty-four hours, and during their use the patient should have vaginal douches, at least once in twenty-four hours, when the pessary is removed. In cases in which the retroversion is accompanied by subinvolution, benefit sometimes follows the use of ichthyol applied on wool tampons.

The pessary, however, must be considered as a crutch which the patient is to discard so soon as possible. As the patient gets up and is able to take exercise, her general health good and constipation absent, she may try to do without the pessary, still continuing the knee-chest posture. If she can be persuaded to avoid corsets, using a suitable waist instead, her chance for avoiding retroversion will be much better. If she nurses the child involution will usually be better, but in anemic women long-continued lactation may bring about relaxation of the uterine supports and favor the development of retroversion.

When, however, a reasonable time has elapsed with the use of the pessary and retroversion promptly recurs when the pessary is not worn, the permanent cure of the dislocation by operation should be considered. Ventrofixation and ventrosuspension should not be selected until after the menopause. Shortening of the round ligaments,

or shortening of the uterosacral ligaments, or both, are the operations indicated.

In shortening the round ligaments the intraperitoneal method is better than Alexander's operation. The operator may select transverse or longitudinal abdominal incision as he prefers. Gilliam's method is essentially that which has given the greatest success, and has been modified by many operators in accordance with their individual judgment and experience. The round ligaments may also be shortened by bringing them through the broad ligaments behind the cervix, if this be thought best. I have had good results in shortening the round ligaments within the abdomen by placing a double catgut ligature about the round ligament at its middle, drawing the loop of ligament through its canal upward and inward, and sewing each ligament to the fascia and peritoneum on the under surface of the abdominal wall, one-third between the pubes and umbilicus. The intra-abdominal operation gives the operator a chance to examine the pelvic tissues and to attack any pathological condition suitable for operation which he there may find. An

obtrusive appendix can sometimes be "lifted" without detriment to the patient.

Intra-abdominal shortening of the uterosacral ligaments has not in my experience been easy or successful. Much better results have followed the closure of vaginal lacerations, extending deeply into the fascias and involving the uterosacral ligaments, in the manner described.

In cases in which congenital retroflexion has been present before pregnancy, all means short of operation may fail to prevent its recurrence after labor. Where involution is good, infection absent, the uterus mobile in its retroflexed position, and the ovaries and tubes not prolapsed or adherent or tender, there is no necessity for correcting the retroflexion. Such a patient will be comfortably well if she is not told of the retroflexion. Where, however, the patient recovers from childbirth, and retroflexion and retroversion, with prolapsed and adherent tubes and ovaries, impaired uterine mobility, and general tenderness are present, the case requires treatment for pelvic infection and not for simple dislocation of the uterus.

RUPTURE OF THE UTERUS, WITH A REPORT OF THREE CASES.*

BY FRANK C. HAMMOND, M.D.,

Adjunct Professor of Gynecology, Medical Department of Temple University; Assistant Gynecologist, Samaritan Hospital, Philadelphia.

One of the most dangerous complications of labor is rupture of the uterus. The fetal mortality varies from 90 to 95 per cent, and the maternal mortality is very high, the latter, according to Ivanhoff,¹ 79 per cent at the Moscow Maternity (covering a period of twenty-five years). The statistics of Merz give a maternal mortality of 62 per cent, which is based on a study of 230 cases from the literature.

In a general way rupture of the uterus may be said to occur once in every 1500 to 2000 labors. It occurs more frequently in multiparæ than in primiparæ—according to Bandl, 88 to 120. Jolly in 573 cases states that in 376 the rupture was spontaneous, while in 196 cases it was traumatic.

The etiological factors in causing rupture of the uterus are usually divided into maternal, fetal, and those incident to intervention, as version, forceps, etc. Among the causes may be mentioned multiparity; the uterine muscle may lack resistance; there may be strong uterine contractions, but the cervix is unable to dilate properly; there may be sufficient obstacle to delivery, and the cervix is caught by the presenting part so that it cannot ascend, and thus tears through; atrophy of the uterine musculature, either congenital or acquired; edema of the lower segment of the uterus from compression by the presenting part; alteration in the elastic tissue; fatty degeneration; cicatrices; malformations; attrition; neglected shoulder presentation; hydroceph-

*Read before the Obstetrical Society of Philadelphia, June, 1908.

alus; the improper use of ergot; version, and the application of forceps.

The treatment of rupture of the uterus may be either conservative or operative, the former consisting of the uterine gauze pack, and the latter simple suture, supravaginal hysterectomy, and panhysterectomy.

Dorland² quotes Klein, who gives 56 per cent recovery by operative methods, and Kolomenkin, who gives 53 per cent recovery by operation (but excluding cases of laparotomy and suture, 64 per cent). Schmidt³ reports 83 cases treated by packing with a mortality of 43 per cent, and 32 by laparotomy with a mortality of 75 per cent. In Klein's statistics the mortality in non-operative cases was 39 per cent, while in those operated upon it was 44 per cent. Varnier⁴ states that out of 11 cases in his experience treated by packing 10 died, whereas 3 out of 6 operated on died; 6 others dying before operative methods could be instituted. In rupture of the uterus through the Cæsarian cicatrix, in a study of 20 cases, Brodhead⁵ gives the mortality as 15 per cent, which is astonishing when compared with the mortality of rupture of the uterus in general. In 12 of these cases hysterectomy was done, in 7 simple suture, and in one case death occurred within a few minutes after the abdominal incision was made.

If rupture has occurred and the fetus is still in the uterus, it is deemed best to deliver promptly by the vagina; but if the child has already escaped into the abdominal cavity, a laparotomy should be done immediately, and followed after removal of the fetus and placenta either by suture of the tear, supravaginal hysterectomy, or panhysterectomy. The same surgical principles are applicable in those cases which are not seen until after the delivery has occurred per vaginam, and the rupture not recognized until subsequent to birth.

Owing to the difficulty of determining the extent of the tear, the amount of hemorrhage, and the impossibility to predict whether or not packing will control the hemorrhage, or if it does, whether it will be permanent, a study of the literature leads

me to believe that the best results will be obtained by abdominal section.

If the rupture is recent and clean-cut, preference should be given to suture. If there is necrosis, the wound jagged, or infection present, then hysterectomy would be the operation of choice. Border-line cases will of course present the greatest difficulties in determining whether to suture or resort to a radical procedure. The condition of the patient, the skill of the operator, and the surroundings of the patient are factors which are to be considered. When one is not an expert in abdominal surgery and the patient's condition is not good, preference should be given to suture.

Dorland quotes ten cases of rupture of the uterus in which suture was done, with one death; five of the nine women who recovered after suture subsequently became pregnant. "These figures, which indicate a mortality of only 10 per cent after suture, and the successful termination of pregnancy in five cases, certainly indicate that the plan of treatment by suture is eminently successful, and therefore should as a rule be advocated."

In the three cases below reported, two were multiparas; one was treated by packing and died before operative methods could be instituted; in the second, supravaginal hysterectomy was done; and in the third case simple suture was employed. In two instances the rupture was caused by hydrocephalus, and in the remaining case by delivery of the after-coming head incident to version. Two of the patients died.

Case 1.—A. R., colored, married, about forty years of age, IV-para. About ten years ago I was sent for by Dr. I. R. Landis, to see this patient with him. I was at Oak Lane at the time, and when I arrived at the patient's house two hours had elapsed. Fearing that I would be detained longer, he called in Dr. W. Wayne Babcock, who preceded me by a few minutes. We found that the child had been delivered, with the exception of the after-coming head. The patient was in deep shock, and her mental condition flighty. A diagnosis was made of hydrocephalus, the fetal skull perforated,

a quantity of fluid evacuated, and the head delivered. The placenta was then expressed by Credé's method, but it did not appear in the vagina, although the placenta was distinctly felt to leave the uterus. A hand was then passed into the uterus, fearing that rupture had occurred, and the right lateral wall from the cervix nearly to the fundus was found torn through. The examining hand was then passed partly through the rent, when the margin of the placenta was detected, the placenta being well up toward the liver. The placenta was seized and very easily removed. Peterson⁶ states: "After delivery of the fetus the placenta should be expressed immediately to allow the uterus to contract and control hemorrhage. Rarely the placenta will escape into the abdominal cavity, where nothing but laparotomy can effect its delivery." Although the placenta in this case was partly under the liver, absolutely no difficulty was experienced in its removal. The pulse rapidly increased in rate, and progressively lost in volume. The uterus was packed with gauze, as firmly as possible with such a large rent, and preparations made for suture, but death supervened before this could be accomplished.

Case 2.—I am indebted to Dr. Wilmer Krusen for the privilege of reporting this case. On April 13, 1907, Dr. Krusen was sent for to see this patient in consultation with the family physician, but as he was detained at the Samaritan Hospital at the time, he very kindly asked me to go in his stead. The patient was a II-para, thirty-five years of age, who had been in active labor about three days. The head had refused to engage during this period, and from what I could ascertain at the time the os had been fully dilated for a number of hours. On the day I saw her she had collapsed on two occasions, from each of which she reacted under stimulation. These attacks of syncope had been attributed to simple exhaustion incident to a prolonged labor. The pulse was rapid and weak, and the patient's condition one of shock. A diagnosis of hydrocephalus was made. The fetal head was perforated through the

anterior fontanel and a quantity of fluid evacuated. As the bones of the head collapsed a hand was passed into the uterine cavity to ascertain if ruptured had occurred, because the history strongly pointed to concealed hemorrhage. A rupture of the uterus was detected on the left side extending from the cervix to midway between the internal os and the fundus of the uterus; there was in addition a lateral tear extending from the above tear posteriorly following the attachment of the vagina possibly half-way round. The woman was hurried to the Samaritan Hospital, where Dr. Krusen immediately opened the abdomen, delivered the fetus and placenta, and did a rapid supravaginal hysterectomy. The fetus had partly pushed through the opening in the uterus, and thus had apparently controlled the hemorrhage throughout the greater part of the vertical tear. The abdomen was found filled with free blood and clots. The operation was done about six in the evening, and the patient died about 11 o'clock the next morning. The temperature did not go above 97° F. at any time, and during the last twelve hours it was impossible to count the pulse-rate. Eight hours previous to death she began vomiting a black fluid, which continued to the end.

Case 3.—B. T., twenty years of age, married one year; the last menstrual period occurred February 28, 1907. Confinement was expected about December 25, 1907. I was called to see her by the attending physician, Dr. Mervyn Ross Taylor, December 6, 1907. Premonitory pains began about one week previously. When I saw her she was in active labor, the os being fully dilated, but the head would not engage. Maternal pelvic measurements normal. Ether was given, and after a faithful trial with forceps Dr. Taylor found that the head could only be partially engaged. I suggested version, which he asked me to do. This was accomplished within the usual time one would expect in a primipara. The body was easily delivered, but the greatest amount of difficulty was experienced in the delivery of the after-coming head, which could only be brought down in the left

oblique diameter, occipitoanterior. In "sweeping" the head out of the pelvis the suboccipitobregmatic diameter appeared to be unusually long. The fetus was dead before version was attempted. Following the delivery of the head there was more bleeding than one would usually expect, and the mother's pulse increased in rapidity and decreased in volume. The placenta was immediately expressed by Credé's method, and although the uterus felt normally contracted the bleeding continued. Upon investigation to find the cause of the hemorrhage, a rupture was found in the left lateral wall of the uterus, extending about one-third of the way to the fundus of the contracted uterus. There was also a complete laceration of the pelvic floor. The ambulance was called and the patient hurried to the Samaritan Hospital. While waiting for the ambulance, and not having sufficient gauze to pack the uterus, this organ was held tightly compressed by the bimanual method, which procedure apparently controlled the hemorrhage for the time being. I opened the abdomen immediately upon her arrival at the hospital, and closed the rent with inter-

rupted sutures of chromic catgut No. 1. She was on the operating table less than half an hour and required a great deal of stimulation. The lacerated sphincter ani muscle was quickly brought together with a few sutures, and the patient returned to bed with a pulse of 160, temperature 97.4°, and respiration 36. She made a slow convalescence, complicated with a phlebitis in the left leg. This patient left the hospital on the thirty-fifth day, with a very slight lameness in the left leg, full control of the bowel, and her physical condition good. In this case I feel confident the rupture did not occur during the performance of version, but in the delivery of an abnormally large after-coming head, about which the lower uterine segment held very closely and apparently would not sufficiently relax to allow the head to glide out.

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SOME RELATIONS OF THE THYROID GLAND.

BY S. P. BEEBE, M.D., NEW YORK.

The thyroid gland is now attracting more attention from the physiologist, the pathologist, and the clinician than it has at any other time in the history of medicine.

Its fundamental importance is gradually being realized, and it, together with the associated parathyroid gland, is coming to be recognized as of quite as much importance to the health and normal functioning of the organism as the liver, kidney, or suprarenal gland. Fairly definite pathological conditions have been associated with the underactivity or the overactivity of the thyroid, but its relation to a series of metabolic disturbances which do not fall sharply into either hyperthyroidism or hypothyroidism is just being demonstrated. Nevertheless the fundamental physiological activity which it performs is yet undecided.

In hyperthyroidism we are confronted with a symptom-complex which has been explained in various ways. It may perhaps seem unnecessary to argue that the symptoms of this condition are due to overactivity of the thyroid function, but some investigators are not yet convinced that such is the case. I shall not attempt to outline all the evidence on this point, but will merely call attention to the fact that the more recent evidence indicates the symptoms of the disease are the result of the direct action of the abnormally large amounts of thyroid proteid in the circulation. It is not denied that a disturbance of vasomotor control, perhaps of a local nature, may be a fundamental fact in permitting the absorption of the abnormal quantity of thyroid proteid, but when the condition

is once established I believe that we are dealing with an autointoxication rather than an intrinsic neurosis. The constitutional disturbance evidenced by the loss in weight, the larger excretion of nitrogen, the disturbed nitrogenous metabolism evidenced by increased creatin, diminished creatinin and low test nitrogen, the characteristic blood findings of a leukopenia with relative lymphocytosis, the profound muscular weakness, the tachycardia which is due to a direct action on the heart muscle, are findings which are reproduced in large part by the artificial administration of thyroid substance, and point to thyroid poisoning and not to a functional neurotic disturbance.

A wide variety of precipitating causes may usher in the onset of symptoms. Physical overwork accompanied by severe mental strain and responsibility, a sudden fright in an otherwise supposedly normal individual, the continued excitement of certain religious observances, a severe emotional shock, or the continued depressing influence of an unsuitable environment, are found to be preceding events in a large percentage of cases. In such instances we might reason that a vasomotor instability has been the primary factor in permitting abnormal thyroid absorption. In a small percentage of cases there has been thyroid enlargement without symptoms for some time. In one such patient a severe fright was followed within eight hours by symptoms of acute thyroid poisoning. In this case, which is typical of a considerable group, we cannot suppose that the secreting cells of the thyroid gland have actually produced during the interval a larger quantity of the iodized thyroid globulin, the absorption of which is responsible for the symptoms. It seems probable that in such cases the primary event is a vasomotor dilatation, and with the increased blood-supply to the thyroid gland the unusual absorption has been permitted. Why with such an origin the condition passes into a chronic disturbance is not explained. Some cases which have originated in such manner may continue for a long period of years, while

others are only a temporary storm, and without treatment the organism rapidly regains a normal equilibrium after the severe nervous shock has passed.

In another group of cases there is fairly good evidence that the disturbance of an infectious disease, notably tonsillitis and typhoid, has been the primary event in the abnormal thyroid physiology. It has been customary to explain these cases by supposing that the thyroid is called into unusual activity in order to combat the toxemia in the disease, and that from this beginning the vicious circle is continued. Some observers maintain that any toxemic disturbance in the body calls forth unusual activity on the part of the thyroid, and they find evidences of such activity in the increased size and the histologically overactive condition of such glands. The examination of over 200 human thyroids obtained from a variety of toxemic and infectious diseases leads me to believe that there is no basis for such a conclusion. The glands have been found to be quite as often atrophic and inactive. There is no doubt that hyperthyroidism often follows tonsillitis, but I believe this may follow as a result of a vasomotor disturbance rather than to suppose that the altruistic action of the thyroid has continued to an ungovernable condition.

Some experimental evidence has been published to show that the administration of thyroid proteid to normal mice permits them to withstand fatal doses of a comparatively simple poison, acetonitrile. I have repeated these experiments on a large series of mice, but have been unable to demonstrate the invariable protection claimed by Hunt and Seidell. I am convinced, however, that the physiological effect of large doses of thyroid may be antitoxic under some circumstances. A remarkable improvement in nitrogenous metabolism which follows thyroid administration in some cases of metabolic toxemia is accompanied generally by a corresponding decrease of toxic symptoms, and it seems probable that the action of the thyroid has

actually decreased the amount of circulating toxic material.

Regardless of the etiology, the patient is mostly concerned with the possibility of relief. The therapeutic measures which have been applied to the various thyroid disturbances are even more numerous than the theories which have been put forward to explain them. In my opinion such a variety of measures of treatment need not argue that the thyroid is not the direct factor in the production of symptoms. In any disease where a large percentage of cases recover without any treatment whatever there will always be found a great variety of therapeutic measures. The surgeon, when sufficiently expert in technique and judgment, undoubtedly cures a large percentage of cases. The x -rays properly applied are undoubtedly effective in many cases. The rest cure has many adherents, and justly so. The application of psychotherapy to these diseases has produced brilliant results when applied by the right man, in the right way, to the right group of cases. We must recognize that practically all the methods of treatment have some psychic effect. This is properly so, and if the physician has no confidence in his therapeutic measures he can scarcely expect it of the patient. And in addition to all these there is the physician who relies upon medicines, and occasionally even upon some various forms of specific treatment which have been advised within recent years. I believe that these various methods of treatment all have their place, and that when confronted with any given case one should try to determine which form of treatment or which combination is the best one to apply. In reaching such a conclusion a considerable number of factors must be taken into consideration. Among these it goes without saying that the particular type of disease is very important, and the particular qualifications and clinical judgment of the physician who is to carry out the treatment must be considered. If an operation is proposed, one must not only consider the type of the disease, but also the skill, judgment, and experience of the sur-

geon who is to perform the operation. If it is possible, I believe it to be wise to treat these cases without operating, for although there is a large factor of safety in the thyroid gland, and a very large percentage of the total gland tissue may be removed surgically without causing immediate harm to the patient, I believe we have not seen enough of the final late results in these cases to justify surgical attack if a simpler means of treatment will give good results and leave the thyroid gland intact. The first person operated in this country for Graves's disease had a relapse thirteen years later, which was readily cured by serum.

The disease is most common in young persons in whom the thyroid gland has its maximum physiological activity, and the fact that a large part of the gland may at an early age be removed with impunity does not prove that an effect which appears later in life may not be unfavorable. Some experiments which we have recently made indicate that in a young animal the thyroid readily absorbs iodine and gives an increased functional activity thereby. In an old animal such a result does not follow; the iodine is either not absorbed at all or only to a very limited extent. We cannot conclude from such experiments that the older animal does not need the thyroid function, for we know from other experiments that it does need it. If a large part of the animal's gland has been removed in early life, it seems possible that in the later years, when the gland is naturally much less active and efficient than in the younger period, some of the difficulties consequent upon old age might be increased. We cannot reason that because in a normal animal the removal of three-fourths of the total kidney tissue works no immediate harm, and may even cause a very marked increase in the total output of urine, such an operation is to be recommended. The ideal result to be attained is the relief of the distressing symptoms of the disease and the restoration of the patient to normal condition with as little physiological injury as it is possible to make. If this can be done by simple medical means and thereby leave

the gland intact, I believe that the surgical treatment is undesirable. Moreover, the medical means of treatment—and in this term I include the serum treatment—can be carried out by any intelligent physician, while the surgical treatment ought to be restricted to those few men who combine the requisite skill with keen judgment in the selection of suitable cases.

I do not hold a brief for the serum treatment. It is probably known that this treatment has now been applied to a large number (about 450) of cases, and as a whole

the results are very good; but I may say that although my interest in this form of treatment is keen, I have within the last six months recommended surgery, x-rays, rest treatment, and psychotherapy in cases which were unsuitable for serum treatment. Nevertheless the statistics which we have obtained up to date from cases treated by many different observers indicate that the serum has a very marked value, and that it gives the physician an additional opportunity to prevent some of the disastrous results of surgery.

PERSONAL EXPERIENCES IN THE SURGERY OF SIMPLE TYPES OF GOITRE.

BY JONATHAN M. WAINWRIGHT, A.M., M.D.,

Surgeon-in-Chief of the Moses Taylor Hospitals, Buffalo, N. Y., and Scranton, Pa.

When some surgeons are reporting thyroid operations by the hundreds or thousands, it seems a little premature to make a report based on only eighteen cases. However, I have always felt that, while statistics based on an enormous number of operations are very interesting, still they may not be of as much value to the general surgeon as the experiences of other general surgeons who are doing a smaller number of cases. Summarizing the data from the present eighteen cases, it is seen that thirteen of the patients operated on were females and five were males. Concerning the etiology of these cases, it is interesting to note that ten of the eighteen cases occurred in people born in Wales or people of Welsh parentage. It would seem, therefore, that the Welsh are prone to this disease, although these figures cannot be accepted as an absolute indication, for a large proportion of our general patients are Welsh.

Concerning heredity in our comparatively few cases, two were mother and son and two were mother and daughter. Another patient had a mother who had a goitre, but the mother was not operated on. These cases of apparent heredity were all in Welsh people. Divided according to their pathol-

ogy, seven of the present cases were simple cysts, two were adenoma with cysts, seven were enlargements of the parenchymatous type, one was of the exophthalmic type, and one was a carcinoma.

As to the extent of the operation, four cases consisted in simply shelling out the cyst, four consisted in removal of the one side, in six one side and the isthmus were removed, and in four a subcomplete operation was done. By the subcomplete operation we mean removal of the entire gland with the exception of a small piece left in to perform the ordinary function of thyroid secretion. Concerning the portion of the gland involved, the right side was involved alone in seven and the left side alone in four cases. In six both sides were involved, and in one case the isthmus alone was occupied by a large cyst. In the latter case the cyst extended about one inch below the sternal notch. The remaining tumors lay entirely in the neck.

As to the operative mortality, all the patients recovered from the operation, and seventeen out of the eighteen are alive and well to-day. One (Case 10) died of a very rapid recurrence of malignant goitre five weeks after operation. As to the accidents of operation, there have been none due to

the anesthetic, which was ether in all cases. One patient bled so freely during operation that an intravenous infusion was considered necessary on the table, and another who was apparently sent to the ward in good condition began to bleed profusely about three-quarters of an hour after the operation. This patient was at once returned to the operating room and found blanched and nearly exsanguinated. The dressings were soaked with blood and the neck was distended with nearly a pint of clotted blood. The wound was hurriedly torn open and the blood wiped away, but at this time the bleeding had entirely stopped, and after simple packing of the wound the patient made an uninterrupted recovery. The postoperative bleeding is always an event to be dreaded in these cases, and it seems that it has been the general experience that when the wounds are reopened the bleeding points have stopped.

We have been fortunate in obtaining primary union in all of the cases. The large majority of patients run a temperature of 101° to 103° for four or five days after the operation. This postoperative incident is mentioned by a number of surgeons and its exact cause is somewhat in doubt. It may be due to excessive absorption of thyroid secretion, or to some unknown nervous influences due to interference with the thyroid itself. In no case have we noted any symptoms of tetany, although it is only within the past few years that we have taken special care to leave parathyroid glands intact.

Of the four cases of subcomplete removal, three patients showed no after-symptoms referable to thyroid insufficiency. One did develop symptoms of myxedema a few weeks after the operation. She was given thyroid extract for two weeks, at the end of which time the symptoms had disappeared and did not recur after stopping the thyroid feeding. We presume in this case that the portion of the gland left in was not able at once to supply the necessary amount of secretion, but that after the two weeks' thyroid feeding it had become so

adjusted as to take care of the normal needs of the body. This patient was perfectly well three years after operation.

As to late results, four cases are so recent that they cannot be considered in this connection. There are fourteen patients who were operated on more than six months ago, and of these fourteen two could not be traced. One died five weeks later of a malignant recurrence. Of those remaining, eleven were seen from six months to four years after operation, and all were well and engaged in their usual occupation with no symptoms whatever. In eight there was no enlargement of the remaining portion of the gland to be felt, and in three there was little enlargement of the remaining portion of the gland, but in all cases the enlargement was slight and did not cause any trouble whatever.

One cannot, of course, draw very definite conclusions from eighteen cases. However, every surgeon has to adopt certain working ideas from his own experiences from month to month, and some of those that we have been led to make may be of interest.

1. *The question of anesthesia.* There has always been a good deal of dread of general anesthesia in goitre cases whether they are of the simple or exophthalmic type. In our own experience this fear has not been well founded, as all of our cases have done well under ether anesthesia and none presented any unusual difficulties. This, too, notwithstanding the fact that ether has always been administered by internes who have been giving ether in some cases only a few weeks.

At the present time we always use the drop method, which is additionally useful in these cases as it does not interfere with the asepsis of the operative field. The face is tightly wrapped with a few layers of sterile or bichloride gauze, and over this is put an ordinary chloroform mask, which is again covered with sterile gauze. The ether can then be dropped on by the anesthetist with sterile gloves and there is no danger from infection, either from the etherizer or the patient's mouth. We always give atropine before ether in these cases, partly for its

effect in reducing the secretion in the mouth and throat, but more especially on account of the influence which Crile has shown that it exerts in blunting the pneumogastric nerve, in case this nerve is interfered with during operation.

2. *Safety of operation.* While formerly we approached these cases with considerable dread, our continued satisfactory experiences have gradually brought us to feel that under ordinary circumstances operations for the simple types of goitre present no more danger than those for hernia or many other operations of choice. Perhaps the strongest argument for the safety of the operation that we can make is simply the record of eighteen cases with eighteen operative recoveries in such unskilful hands as ours.

3. *The question of surgical treatment and the indications for operation.* From what has already been said, it will be apparent that we feel that the simple type of goitre is nearly always a surgical disease. I believe that we have as yet no other treatment which permanently influences even the parenchymatous types, and certainly there is none which has any effect on the cystic, adenomatous, or malignant types. It is true that, in a few cases of young women, the enlargement of the thyroid may subside after a time, and unless it causes inconvenience it need not be interfered with. We believe that all cases giving symptoms of pressure and all cases showing progressive enlargement should be operated on at once.

4. *As to the amount of gland to be removed.* In many cysts it will be sufficient simply to shell them out bluntly. In parenchymatous types we believe that a removal of the larger half and the isthmus at least should be done. In one or two cases we have seen a slight enlargement follow operation in the remaining portion, and if the isthmus enlarges in this way it may again give pressure symptoms. Of course the entire gland must never be removed. Crile's rule of leaving behind an amount of thyroid tissue about equal to the size of the normal gland is the best one to follow.

ABSTRACTS OF CASES.

Case 1.—Cyst of thyroid. J. B., English, aged forty-nine, was a miner. Family history was negative. Two years ago he noticed a small tumor in right side of neck; never had been painful and never caused trouble with breathing or swallowing. General condition was good.

Operation September 21, 1902, under ether, showed tumor to be a simple cyst in the substance of right half of thyroid gland. It was shelled out by blunt dissection, leaving normal portions of gland intact.

Pathology: Simple cyst one and a half inches in diameter, containing thick, glairy fluid.

Course: Uneventful recovery; primary union. When seen four years later there was no trouble whatever in neck; no thickening of remaining portion of gland, and scar barely visible.

Case 2.—Parenchymatous goitre. Mrs. M. M. was a seamstress. Family history was negative. She had three children. Nine years ago she noticed a swelling in right side of neck. Six months ago the other side began to swell and she began to have difficulty in swallowing and breathing. These symptoms and the tumor gradually increased. Five years ago she was treated with iodine at the University of Pennsylvania, and three months ago she was treated with iodine externally and iodide of potash internally at the M. T. H. Dispensary. There were no signs of Graves's disease.

Operation January 24, 1902, under ether: Excision of right half of gland.

Course: Uneventful recovery; primary union.

Pathology: Microscope shows simple parenchymatous goitre. Mass removed was four by three by three inches. Seen fifteen months later; no symptoms were referable to thyroid gland. There was a slight enlargement in the region of the isthmus, but this caused no trouble.

Case 3.—Cyst of thyroid. Mrs. W., married, aged forty-five, American, housewife, for several years had had a tumor in the right side of the neck, which had gradually

increased in size until it caused some pressure on trachea. Swelling involving right half of thyroid gland was about the size of a hen's egg.

Operation May 1, 1903, under ether: Excision of entire right half of gland.

Course: Uneventful recovery; primary union.

Pathology: Tumor removed was spherical in shape and about three inches in diameter. The lower portion contained two cysts about one and a half inches in diameter filled with thick, grumous blood. The remainder of the enlargement was parenchymatous in type. Patient was operated on for gall-stones three years later. When seen again five years later general condition was good. There was slight increase in the left half of the gland, which was especially marked over the trachea and caused slight pressure. Patient refused to have portion over trachea removed.

Case 4.—Cyst of thyroid. A. R., aged eighteen, American, was a laborer. Family history was negative. Two months previously swelling in the side of the neck was first noticed. When first seen it was about the size of a marble, but had grown rather rapidly. It was slightly painful and interfered slightly with breathing and swallowing. If he pressed on the tumor he could not swallow at all.

Operation May 7, 1903, under ether, showed the mass to be a cystic tumor in right half of thyroid gland. This was shelled out by blunt dissection.

Course: Uneventful recovery; primary union.

Pathology: Simple cyst one and a half inches in diameter was filled with clear, glairy fluid. Patient has not been traced since operation.

Case 5.—Parenchymatous goitre. E. W., aged seventeen, single, was a seamstress. Parents were Welsh. Mother has had a very large goitre since childhood (see Case 9). Patient's growth began four years previously. Had shown considerable variation in size, sometimes interfering with swallowing, but never with respiration.

Operation May 17, 1904, under ether: Excision of right half of gland.

Course: Uneventful recovery; primary union.

Pathology: Portion of gland removed is about three inches in diameter and of parenchymatous type. When seen four years later patient was well in every way; no enlargement of remaining portion of the gland, and no symptoms referable to thyroid.

Case 6.—Parenchymatous goitre. W. S., English, aged seventeen, single, was a mine laborer. Mother had a goitre. Five years previously the patient noticed a swelling in the neck. This had gradually increased in size and for the past two years had caused considerable difficulty in breathing.

Operation May 11, 1905, showed both sides of gland considerably enlarged, more so on left side. The entire left half of gland was cut away, and it was then seen that a portion of the enlarged right half had grown over the median line and was pressing on the trachea. This portion was separated by blunt dissection from the remainder of the right half and removed.

Course: Uneventful recovery; primary union. Patient seen one year later. The swelling on the right side was slightly larger than at the time of operation, but caused no trouble. He was working regularly in the mines.

Case 7.—Parenchymatous goitre. V. V., aged thirteen, single, was an American. Family history was negative. Had typhoid fever three years and diphtheria five years previously. Her mother dated the swelling in her throat from the time she had diphtheria, and said she had never been well since. She had had frequent colds and sore throat. She had had a great deal of dyspnea, and her mother had at times noticed bulging of the eyes and tremor of the hands. She had had frequent headaches and numerous convulsions in the last five years; sometimes these had come as often as once a week.

Operation August 15, 1904, under ether: The right half of gland was removed.

Course: Uneventful recovery; primary union.

Pathology: Tumor was about four by two by three inches and of parenchymatous type. There were no cysts.

Patient returned to hospital in December, 1905. She said that since her previous discharge she had been relieved of her constitutional symptoms, but there had been a gradual growth of the gland on the unoperated side. Examination at that time showed the old scar in good condition, and there was no tumor on the right side of the neck. On the left side there was a tumor about six inches long, soft, and having the typical characteristics of a parenchymatous goitre.

Second operation December 30, 1905, under ether: The entire left half of the gland was removed, with the exception of a portion about one-half inch in diameter near its median border. This portion was most adherent to the surrounding structure, and it was considered it would get the best blood supply if left in.

Pathology: Tumor removed was six by three by four inches and weighed six ounces. There were no cysts, and on section it showed the typical gross appearance of the parenchymatous goitre. Microscopic examination showed a parenchymatous goitre.

Course: Discharged twenty-one days after operation; primary union in wound, and patient apparently well. She returned, however, in about one week and complained of headaches, weakness, and drowsiness. She was given thyroid extract by mouth, and these symptoms entirely disappeared at the end of the week. Since that time she has been perfectly well without thyroid feeding. She was last seen three years after the second operation.

Case 8.—Adenoma and cyst of thyroid. Mrs. G. D., aged twenty-six, married, Welsh, housewife, had had an enlargement of the thyroid gland for a number of years, which had caused considerable trouble with swallowing.

Operation August 17, 1906, under ether: Right half of gland and isthmus removed.

Pathology: There was one cyst about one inch in diameter filled with thick, glairy fluid, and remaining portion of the right half was enlarged to about twice its normal size. Sections showed an adenomatous structure. The acini were very small and many did not contain any colloid at all, but were represented by very small tubes lined with epithelium which was much more cuboidal in shape than the normal thyroid tissue. There were also large areas of poorly formed connective tissue which contained in its meshes many atrophic degenerated acini, very few of which contained colloid.

Course: Uneventful recovery; primary union. When seen twenty months later patient was well; no symptoms referable to thyroid.

Case 9.—Adenoma and cyst of thyroid. Mrs. J. W., aged fifty-two, Welsh, housewife, said she had had a tumor in the neck ever since she could remember. This had grown larger with each pregnancy, but had been about the same size for the past four years. It caused considerable trouble with breathing. A daughter of the patient also had a goitre (see Case 5). Patient had never had any exophthalmic symptoms.

Operation July 21, 1906, under ether: Right half of isthmus and the large lobulated portion of the left half which was pressing on the trachea were removed. Wound was apparently thoroughly dried and patient returned to ward in good condition. About three-quarters of an hour later word was sent back to the operating room that the patient was bleeding profusely. She was immediately brought back to the operating room with her face blanched and pulse weak and rapid. She complained very much of air hunger and her bandages were soaked with blood. The wound was hurriedly opened without further anesthesia; the entire cavity in the neck was filled with clotted blood. This was rapidly wiped away, but no bleeding points could be found at that time. The cavity was tightly packed with plain gauze and the skin again sewed up except for a small

portion for removal of the gauze. About 500 Cc. of salt solution was given intravenously at that time, and a similar amount given into the tissues under the breast. She was returned to the ward and made an uneventful recovery. She was discharged twenty days after the operation with the wound healed.

When seen eighteen months later there was slight enlargement of remaining portion of gland, but this was giving no trouble.

Pathology: The portion of the gland removed from right side was about five by two by three inches in diameter. The portion removed from the left side was spherical and measured about one and a half inches in diameter. The mass removed weighed six and one-fourth ounces after rupturing a few small cysts. On section the tumor resembled a typical parenchymatous goitre. There were three or four cysts, the largest being one inch in diameter. In several places there were calcareous deposits; one small lobule about three-fourths of an inch in diameter had an entirely different appearance from the rest of the tissues. It was yellowish-gray in color and looked like carcinomatous tissue. Microscopic sections did not show any cancer, but a large portion of them were of the distinctly adenomatous type as in the previous case.

Case 10.—Carcinoma of thyroid. Mrs. D. Clinical history was lost. One son had a goitre (see Case 12). Woman was in fairly good condition. There was an enormous tumor in the neck corresponding to the thyroid gland; it was tense and very slightly movable; surface was smooth and not nodulated. It extended from the angle of the jaw to the clavicle and filled up the entire anterior portion of the neck.

Operation April 1, 1907, under ether: The entire thyroid gland with the exception of a small portion at the apex of the upper right lobe was removed. The dissection was very extensive, and when finished the styloid process of the mastoid bone was exposed in the upper portion of the cavity and the apex of the lung was exposed at

the lower portion. There had been a good deal of hemorrhage, and patient was given an intravenous infusion on the operating table.

Patient made a good recovery from operation, but within two weeks the swelling had recurred, so that at the end of that time it was practically as large as before the operation. It soon interfered a great deal with respiration, and patient died five weeks after operation on account of mechanical pressure on the trachea.

Pathology: Section showed a diffuse infiltration of cells resembling the normal thyroid epithelium. In many places these cells were present in large diffuse masses, and in other places the tissues retained a more typical alveolar structure.

Case 11.—Parenchymatous goitre. K. R., aged sixteen, single, Irish, was a schoolboy. There was no goitre in family. He noticed tumor in neck five weeks before admission; no trouble with swallowing or shortness of breath. It had grown very rapidly since first noticed. Tumor involved right half of thyroid gland.

Operation April 4, 1907, under ether: Right half of gland was removed.

Course: Uneventful recovery; primary union.

Pathology: Sections showed typical parenchymatous goitre.

When seen one year after operation condition was good. He works regularly in silk mill. There was no enlargement of opposite side.

Case 12.—Parenchymatous goitre. D. D., aged twenty-one, single, Welsh. Mother was operated on for goitre in M. T. H. (see Case 10). Patient first noticed growth in neck two years before. It caused considerable pain and some trouble with breathing. Patient had been very nervous since she first noticed the growth; she felt weak and dizzy, and had no ambition. Swelling occupied isthmus and left lobe.

Operation July 20, 1907, under ether: Left lobe, isthmus, and part of right lobe were removed.

Pathology: Typical parenchymatous

goitre; no cysts. The left lobe was three by two by two inches. The portion of the right lobe removed was about the size of a walnut.

Course: Uneventful recovery; primary union. When seen a few months after operation patient was well.

Case 13.—Parenchymatous goitre. B. P., aged twelve, Welsh, was a schoolgirl. There was no goitre in family. She first noticed swelling in neck about one month before, and it had grown very rapidly since that time. It interfered considerably with swallowing and breathing.

Physical examination revealed a tumor corresponding to right half of thyroid gland about the size of a man's fist, and a similar tumor on left side but somewhat smaller.

Operation October, 1907, under ether: Thyroid vessels on right side were ligated and right half of gland was removed. When this was removed it was seen that the enlarged left half still pressed considerably on the trachea in the middle line, so that the left half was removed in a similar way, with the exception of a small piece at the upper corner about three-quarters of an inch in diameter.

Pathology: Sections resembled exophthalmic type; acini moderately dilated with colloid, which took a bluish tinge from the hematoxylin. Many acini were irregular and branched. The alveolar epithelium was frequently of the high columnar type, but always in single layers.

Course: Uneventful recovery; primary union.

When seen six months later patient was well; no enlargement of remaining portion of gland.

Case 14.—Parenchymatous goitre. Mrs. H. W., aged thirty, American, was a housewife. There was no trouble of similar character in family. Her tumor appeared when she was twelve years old: first, directly in the median line, later on the right side, and then on the left. It increased gradually, and she did not notice any change in size during the child-bearing periods. During the past year it had grown very

rapidly and pressed on the trachea. Her face was often bloated and the blood in her face did not circulate well. She has usually been nervous, but has had no eye symptoms.

Physical examination revealed a well-nourished, healthy patient, but skin of face was slightly edematous. There was a very large tumor corresponding to the thyroid gland and involving both halves and the isthmus, but the right half was much larger. The veins over the tumor were very prominent; the eyes were not bulging and there were no signs of Graves's disease.

Operation January 23, 1908, under ether: Right half of isthmus was removed, but with considerable difficulty and after a good deal of bleeding. There was still a large mass formed by the left half of the gland, but on account of the patient's condition it was considered better to remove this at a later time. Wound was carefully dried and sewed without drain. Patient made a good recovery from this operation.

Second operation March 7, 1908, under ether: The entire left half of the gland was removed with the exception of a small portion near the middle line. Wound was sewed tight without drain.

Pathology: Portion of tumor removed at first operation weighed 500 grammes. Portion removed at second weighed 385 grammes. Both had typical appearance of parenchymatous goitre on gross section and also under the microscope.

Patient reported by letter six months after operation that she was perfectly well; there was no enlargement in the neck of the remaining portions of the gland, and no disturbances of any kind.

Case 15.—Cystic goitre. Mrs. J. J., aged thirty, Welsh, was a mill worker. There was no similar trouble in family. She had noticed a fulness in the neck for several months, but this had not caused any difficulty. She came to hospital for movable kidney with aggravated symptoms and wished thyroid tumor removed at the same time kidney was operated on.

Physical examination revealed a very

freely movable, tender kidney on right side. Just above sternal notch there was a tumor corresponding to the thyroid about three inches in diameter. This was soft and smooth in outline and had the typical appearance of a cystic goitre.

Operation July 11, 1908, under ether: Curved incision about one inch above sternum. Tumor was a cyst apparently growing from the isthmus. It was shelled out without ligating any of the thyroid vessels, and only a few small bleeding points in its bed had to be ligated. The cyst extended about one inch below the margin of the sternum in the middle line.

Course: Uneventful recovery; primary union.

When discharged, one month after operation, the patient was well.

Pathology: Cyst removed was two inches in diameter and contained a clear fluid. Microscope showed usual appearance of cystic goitre.

Case 16.—Cystic goitre. Mrs. W. J. E., aged forty-three, married, Welsh, was a housewife. There was no goitre in family. Three months before she was suddenly awakened one night with feeling of choking in her throat. This had passed off, but she had had considerable shortness of breath at intervals ever since. She said she did not notice the tumor in her throat until about two months before, when it was its present size. She was hoarse at times, had no trouble with swallowing, and was somewhat nervous and excitable.

Physical examination revealed a tumor in the neck corresponding to the left half of the thyroid gland. Tumor was about two inches in diameter and most prominent directly over trachea. There were no signs of Graves's disease.

Operation July 11, 1908, under ether: Tumor easily exposed and found to be a cyst, occupying nearly the entire left half of thyroid gland. The thyroid vessels were tied, and the entire left half and isthmus were removed.

Course: Uneventful recovery; primary union.

Discharged eleven days later; the patient was well.

Pathology: Cyst removed was about two inches in diameter and contained about one ounce of clear yellow fluid. The cystic portion lay directly over the trachea. Microscope showed a typical cystic goitre. Portions of the thyroid removed uninvolved in the cyst were normal.

Case 17.—Cystic goitre. Mrs. E. G., aged twenty-eight, married, Irish, was a housewife. There was no goitre in family. She first noticed tumor in neck three weeks before. She said that it bothered her some in swallowing, but she had no trouble in breathing. Patient said she was quite nervous.

Physical examination revealed a small tumor about one inch in diameter corresponding to thyroid gland. There were no signs of Graves's disease.

Operation July 23, 1908, under ether, showed that the enlargement consisted of a cyst involving left half of thyroid gland. Cyst was about one inch in diameter. The thyroid vessels on left side were ligated and cyst and entire isthmus were removed. The right side and a small portion of the left above the cyst were left intact.

Pathology: Microscope showed typical picture of cystic goitre. Isthmus showed normal gland tissue.

Course: Uneventful recovery; primary union.

Discharged eight days later; the patient was well.

Case 18.—Cystic goitre. E. A., aged fifteen, single. Father was Dutch; mother, Welsh. There had been no similar trouble in family. Eight months before she noticed difficulty in swallowing, and a short time after she began to have shortness of breath on exertion. One month before she noticed a small swelling on the right side of the neck.

Physical examination revealed a tumor about one inch in diameter corresponding to left half of thyroid gland. There were no signs of Graves's disease.

Operation August 22, 1908, under ether:

Curved incision over lower part of neck. Tumor was found to be a cyst involving the upper part of left half of thyroid gland. Thyroid vessels were ligated and entire left half and isthmus were removed.

Course: Uneventful recovery; primary union.

Discharged fourteen days later; the patient was well.

Pathology: Isthmus and lower part of thyroid were normal. Upper part was a cyst one and a half inches in diameter

containing thick, grumous fluid. Entire tissues removed weighed fourteen grammes in fresh state.

Microscope showed no epithelium in section of cyst edge. The cyst edge contained very little connective tissue capsule, but fairly normal thyroid tissue extended close up to cyst edge. There was practically no pressure on the acini near the cyst edge. Sections farther from cyst edge showed thyroid tissue with acini rather larger than usual, but otherwise normal.

THE USE OF THE X-RAY IN THE TREATMENT OF EXOPHTHALMIC GOITRE.

BY J. C. PRICE, M.D., SCRANTON.

The group of symptoms, known as exophthalmic goitre, is caused by a hypersecretion or activity of the thyroid gland accompanied by a hypertrophy of its parenchyma and a much increased blood supply to the part. Whatever may be the exciting cause of this condition, the relief obtained by removing part of the gland would indicate that an agent which could cause a more or less permanent atrophy and decreased blood supply to the gland without surgical interference, danger or shock to the patient, would be an ideal remedy for this condition.

I have been led, by the observation of others and my own limited experience, to the belief that we have such an agent in the x -ray. The well-known power of the x -ray to cause glandular atrophy and diminution in the caliber of blood-vessels, more or less permanent, depending upon the length and number of exposures, fills the indication.

I have treated three cases of exophthalmic goitre by this method with good results; the technique employed is as follows: A tube having a penetration of six or seven on the radiochrometer scale was used, allowing one milliamperere of current to pass through it. The anode being placed twelve inches from the gland, the patient's face and chest

are well protected by tinfoil, allowing only the neck to be exposed to the x -ray. The exposed part is covered with five or six layers of wet gauze, which acts as a filter, absorbing some of the softer rays and catching any electrified particles that may be projected from the tube to the patient; these particles sometimes infect the skin, causing a very inconvenient dermatitis. The exposure, lasting from ten to fifteen minutes, is given three times a week at first and later once or twice a week. The exposures are discontinued at the first indication of redness of the skin, to be taken up again as soon as they may be without danger of a severe dermatitis.

Other than the x -ray treatment, the patient is given autocondensation, an electrode being placed over the epigastrium. This is given for the sedative effect on the circulation and the nervous system and the stimulating effect on the digestive organs to correct as far as possible any autointoxication, which may be an exciting cause of the disease.

The patient is advised, as far as possible, to exclude meat from the diet and is given iron and arsenic if he shows much anemia. A glandular reaction is shown very early in the treatment, characterized at first by swelling and hardening, and later by a

marked diminution in the size of the gland. This is well described by Dr. Cook in his report of five cases in the *Journal of the American Medical Association*, March 7, 1908.

The reaction takes place in a lesser degree from time to time as the treatment progresses; the patient is soon relieved of the most marked nervous symptoms, especially the insomnia, the sleep becoming quiet and restful. There is usually a decided fall in the pulse-rate after the treatments, this being most marked at first, the pulse reacting less and less as it becomes nearer normal. The exophthalmos gradually becomes less prominent until, when the patient has had a normal pulse-rate for some time, it is scarcely noticeable.

The treatment should be continued at greater intervals after the patient has become practically normal, to insure against a return of the disease. The operator must bear in mind that the atrophy of the gland will progress for some time after the treat-

ments cease, followed by a gradual regeneration of the glandular epithelium, which, I believe, will never be great enough to cause a return of the disease if the treatment has been continued long enough.

If the cures produced by this treatment prove permanent, the advantages are many, among which is the freedom from the mortality which occurs in surgical treatment; this mortality, according to Dr. Mayo's report of two hundred cases (*Journal of the American Medical Association*, July 4, 1908), is five per cent from operation, and many surgeons have larger.

The patients will submit to *x-ray* long before they will surgery, thus permitting us to treat them before their general system is profoundly affected. They may continue their ordinary occupation, are freed from the harmful excitement that must occur before an operation, and the long convalescence following. There is no disfiguring scar and there is less expense.

THE SURGICAL TREATMENT OF MALIGNANT GOITRE.

BY EDWARD MARTIN, M.D.,

Professor of Clinical Surgery in the University of Pennsylvania, Philadelphia.

Patients suffering from malignant disease of the thyroid are referred to the surgeon for radical cure, or for the relief of symptoms usually so urgent and distressing as to render life unbearable. The radical cure, apparently negated by the appalling statistics of Braun, only one patient in twenty-five operative cases being alive at the end of a year, and of Madelung, who reports that of 110 cancerous thyroids treated surgically 98 of the patients died from operation or rapid recurrence, has in recent years seemed not only possible but distinctly probable, providing an early diagnosis of the condition be made. Improved technique is responsible only in part for the greatly lessened immediate and remote mortality of the present day.

The question of radical cure is then almost entirely dependent upon timely diag-

nosis. Such a diagnosis can never be absolutely assured. It is based on probability and not certainty; hence, surgical intervention dependent on such probable diagnosis will at times be practiced upon thyroids which subsequent microscopic examination will show are subject to benign enlargement. This, however, is not to be regretted, as the operation is a safe one, and at the worst it has removed a pathological organ having a detrimental effect upon the general health and particularly subject to malignant invasion.

There are some generally recognized factors in relation to the development of malignant thyroid which bear directly or indirectly on the question of early diagnosis. Malignant struma is essentially an affection of middle and old age, though it has been noted at about the period of puberty. In a

large percentage of cases (Delore places it at eighty-three) there is a history of previously existing goitre. Careful macroscopic and microscopic examination of malignant thyroids nearly always shows evidences of a pathological condition which must have preceded the cancer. Doubtless even lesions sufficiently pronounced to be demonstrable clinically are often overlooked till the marked tumor of malignancy calls for a careful examination. Malignant thyroid is more frequent in women, probably because goitre is in them more frequent.

The cancerous invasion may be in the form of carcinoma or sarcoma. Diffusion of either may take place by the blood-vessels or lymphatics, nor does either exhibit an age predilection, nor a characteristic form of growth; hence a clinical distinction between the two affections cannot be made.

Malignancy, meaning by this rapidity of growth, extension to surrounding structures, and metastases, varies greatly in degree. The infiltration exceptionally stimulates subacute or chronic thyroiditis of the non-suppurative type, growing and infiltrating in weeks to the extent usually not observable for months or even years. The capsule offers considerable resistance to further extension, hence metastases may be noted while the primary tumor is still intracapsular and, exceptionally, while it is still so small as to escape detection even on most careful examination. Metastasis exhibits a predilection for the deep lymphatic glands of the jugular and carotid chains and their extensions, the lungs and pleura, the bones of the head, the vertebral bodies, and the ribs. These metastases present the clinical features of a highly vascular osteosarcoma, from which the diagnosis can be made only by the detection of the primary lesion in the thyroid.

The early diagnosis of thyroid cancer is based upon the apparently causeless enlargement of a goitre, or the development of a tumor in a previously healthy thyroid, occurring in a person over fifty years old. The tumor usually develops first in a lateral lobe; exceptionally the whole gland seems to be

infiltrated from the first. This tumor is usually characterized by induration and tenderness distinctly more pronounced than that incident to simple goitre.

A similar swelling may be caused by hemorrhage. It is, however, sudden in onset, often follows a strain or direct traumatism, and the immediate enlargement begins to subside in a few days.

Gumma begins precisely as does cancer; it is extremely rare; its true nature might be suggested by a specific history associated with the blood reaction and the lesions of this disease and by the results of a vigorous course of inunction and iodides.

Tuberculosis as an isolated lesion, still more rare, could not be distinguished in its early stages from malignant disease, though the tuberculin test might suggest a diagnosis. Neither syphilis nor tuberculosis confers immunity against cancer.

Acute thyroiditis is characterized by rapid, stormy, septic onset. Chronic thyroiditis is a rare affection, so like acute malignant infiltration that a differentiation may be extremely difficult. Its toxic or septic nature might be suggested by its association with a local or general infection. It presents a typical induration which may persist for weeks or months, but does not exhibit the early pressure symptoms characteristic of cancer.

The probable diagnosis of a malignant thyroid is, then, based entirely on a causeless, usually indurated and slightly tender, persistent enlargement of the thyroid, occurring during the age of incidence.

If the case be kept under observation, corroborative symptoms of cancer will develop. Among the first are those of pressure, evidenced by dyspnea, aggravated by exercise, often causelessly paroxysmal. As a rule it is not till this symptom develops that the patients come under medical supervision.

Dyspnea is attended by obviously progressive enlargement, by hoarseness of voice, incident at first to laryngeal congestion and edema, later to irritation of the recurrent nerve, by pain referred to the oc-

ciput, ear, back of the neck and shoulder, by difficulty in swallowing, frequently by palpable involvement of the deep lymphatic glands of the jugular and carotid group, by fixation of the tumor and infiltration of the surrounding parts, by the symptoms of venous stasis, of pneumogastric and sympathetic irritation, at times by the complex of Graves's disease, and by metastases.

In its complete development the diagnosis is obvious and unmistakable and also futile. When infiltration has not extended beyond the capsule, the tumor is still movable, the lymphatics are not palpably enlarged, and there are no metastases, operation still gives a fair promise of radical cure even though pressure symptoms are well developed. A good prognosis is, however, justified only when the gland or its affected portion is entirely removed before the diagnosis of malignancy can be formulated. The operation practiced at this time is comparatively simple, with a mortality so low as to render its justification absolute.

Even though metastasis has developed, if the thyroid infiltration be still intracapsular, removal of the gland, together with its metastatic focus, is advisable.

The operative difficulties and the immediate and remote dangers of operation upon the thyroid increase in geometrical ratio to the certainty of diagnosis of malignancy. With involvement of the trachea or esophagus, or both, and infiltration of the perithyroid tissues, radical cure becomes at best a remote possibility, though operation conducted in accordance with modern principles—*i.e.*, complete extirpation regardless of structure—has occasionally been followed by success. Such a radical operation may imply resection of the trachea, esophagus, jugular veins, pneumogastric and recurrent nerves, or even the carotid artery of one side.

Often these cases are not given surgical consideration till the infiltration has progressed so far as to render radical operation obviously impossible, even in its most extended form.

The dyspnea and pain, particularly the

former, are, however, so urgent that relief is imperative. Since the dyspnea is due to mechanical occlusion of the trachea by the pressure of the tumor, its relief might be accomplished by a tracheotomy below the area of narrowing. This is at the best a difficult operation, at the worst a well-nigh impossible one. The larynx is always displaced and in all its usually accessible portion is covered by the malignant growth. The mortality of such palliative tracheotomy is almost absolute, one or two weeks being, with few exceptions, the maximum of life. Therefore the procedure of choice when surgical intervention can be deliberately undertaken should be the freeing of the trachea by the removal of as much of the cancerous tissue as can be taken away without immediately destroying life.

When dyspnea of threatening fatal intensity and persistence develops in the absence of preceding surgical treatment, an emergency tracheotomy is likely to be unsuccessful, since, because of the usual downward and poststernal extension of the carcinoma, the opening in the trachea, even if it be made, may be distal to the obstruction. Under such circumstances intubation by means of a small woven stomach-tube opened at its end and with two lateral orifices offers a better prospect of safely and quickly overcoming the obstruction.

When, during the early course of a formal operation, such dyspnea develops, intubation may be serviceable, but usually tracheotomy is practiced. If the position of the trachea is undetermined and it is inaccessible below the tumor, the larynx should be opened above and a tube passed through the constricted part of the trachea, or if this procedure be inapplicable the trachea may be identified by means of a sound introduced through the laryngeal opening.

As a special postoperative complication of strumectomy for cancer, tetany should be mentioned because of its frequent occurrence. Calcium salts seem to give the most relief.

Local recurrence of malignant goitre is characterized by a general infiltration which,

except in the case of the semibenign papillary cystadenoma, it is obviously impossible to remove by a second operation. The papillary cystadenoma recurs as a local tumor of slow growth, and its recurrences have repeatedly been removed with ultimate success.

ACTION OF RADIUM ON VASCULAR TISSUE.

According to DOMINICI and BARCAT (*Arch. des Mal. du Cœur des Vaisseaux et du Sang*, March, 1908), if the skin of a guinea-pig be exposed to radium for a number of times (as if for therapeutic measures), and a month after the last exposure the animal be killed and the radiated skin be examined, the following changes will be found:

The connective tissue bundles and the elastic fibers, which in a normal state are abundant, have almost completely disappeared and are found to be replaced by innumerable fusiform and branched connective tissue cells, which form a network of elongated and narrow meshes; the cells forming the network are connective tissue cells which have proliferated after having undergone a kind of embryonic, retrograde change. The cellular network rests on the walls of numerous cavities, which are filled with red and white corpuscles. These cavities are really small blood-vessels which have become dilated and transformed into embryonic capillaries. These capillaries are further enlarged by budding at their extremities. At a still later period the size of the blood cavities diminishes, the capillaries become greatly narrowed, and their lumina may even virtually cease to exist. Some of them become converted into ordinary fusiform cells placed end to end and become incorporated in the connective tissue network. During this time the anastomotic connective tissue cells begin to lose their embryonic character and form connective tissue fibrils, and thus is gradually produced a definite cicatricial tissue. Six

or eight months after the radium applications it is found that the fixed tissue cells become rarefied, their bodies and nuclei become flattened, and their chromoplasm disappears; their anastomoses with neighboring cells cease to be visible; the connective tissue bundles separating the layers of fibroblasts increase in thickness, whilst the elastic fibers appear in increasing numbers.

The effect of radium emanations on cutaneous tuberculosis is characterized by three phenomena: First, the inflammatory reaction surrounding the tuberculous tissue is reduced (the exudation of polynuclear leucocytes is checked and the lymphatic cells are converted into plasma cells). Secondly, the vascular connective tissue stroma, which was the seat of simple inflammation, becomes organized. Thirdly, organization also extends to the tuberculous follicles themselves, the epithelioid cells losing their globular shape, becoming elongated, and forming a network of cells of embryonic type. Cure is brought about by the transformation of this myxomatous tissue into sclerotic tissue.

In the case of sarcoma, exposure to radium brings about the following changes: The size of the cells and of their nuclei gradually diminishes, and in shrinking the neoplastic cells elongate, their nuclei flatten, and the cells finally acquire the conformation of large embryonic connective tissue cells, which anastomose with one another; a myxoma is therefore resembled; this ultimately changes into fibromatous tissue.

Under the influence of radium an epithelioma exhibits the following series of changes: The tumor cells gradually diminish in size and ultimately disappear. Simultaneous with these changes the inflammatory processes which accompany the growth of the tumor cease to appear, and the vascular connective tissue undergoes organization.—*British Medical Journal*, Aug. 8, 1908.

EDITORIAL.

THE USE OF TUBERCULIN IN THE DIAGNOSIS OF PULMONARY TUBERCULOSIS.

We think it may be stated very positively that the use of tuberculin by injection should not be resorted to by the general practitioner unless he has some special training and knowledge in the technique of the employment of this modern aid to diagnosis.

As is well said by Hamman in the *Archives of Internal Medicine* for June, 1908, "there is no more interesting phenomenon in the whole range of medicine than the tuberculin reaction, and notwithstanding the fact that it has been studied closely for a number of years by the most skilful investigators, it is still a subject which is imperfectly understood."

As a general proposition it may be stated that tuberculin in any ordinary quantity is usually inert when injected into healthy animals and healthy men. When it is considered, on the other hand, that susceptible patients will sometimes react to so small a quantity as one-fifth of a milligramme, or even far less than this, and that one milligramme is ordinarily considered the maximum dose for testing persons suspected of being tubercular, the wide variation between the susceptibility of those who are infected and those who are healthy at once becomes evident.

It is a remarkable fact, in connection with the influence of tuberculosis, that one focus of disease not only affects that part of the body in which it is situated but indirectly every other cell in the body, so that when tuberculin enters the system a universal and often a violent reaction ensues. This is well illustrated not only by the effects which follow a subcutaneous injection of this substance, but by the well-known ophthalmotuberculin reaction in which the eye of an infected patient becomes injected and inflamed when tuberculin is dropped into it, although locally there may be no tubercular manifestation. Not only do local changes

occur in the diseased area and elsewhere, but fever and other constitutional symptoms are marked in tubercular patients when tuberculin is given.

Occasionally persons who are not tubercular give the reaction because they have some idiosyncrasy which makes them sensitive, and it is a noteworthy fact that the use of tuberculin in repeated doses is quite capable of developing a condition in which reaction will ensue, even though no true tubercular lesion exists in the body. In other words, an artificial hypersensitiveness is developed.

So far, the statistics as to the constancy with which patients who are infected with tubercle bacilli will react to tuberculin, although exceedingly large, lack in a considerable proportion of cases the scientific confirmation which comes from autopsy findings. On the other hand, the very large number of observations which have been made upon the lower animals, which are susceptible to this disease and in which autopsy findings can be pretty constantly obtained to control results, have proved without doubt that a positive reaction when tuberculosis is suspected is of great clinical importance, although it is a noteworthy fact that a reaction occurring in a patient in whom tuberculosis does not exist may very rarely take place. This is true of animals as well as of man; that is to say, there are instances on record in which an autopsy has failed to reveal a tuberculous focus yet in which a reaction from tuberculin occurred.

As is well pointed out by Hamman, in the paper to which we have referred, there are four essential features which must be studied in the tuberculin reaction, namely, the temperature, the constitutional disturbance, the reaction at the spot where the tuberculin enters the body, and the reaction in the area in which the primary pathological process exists. As is well known to most of our readers, a reaction to an injection of tuberculin usually develops in from

six to twelve hours, reaches its acme by the end of twenty-four hours, and the temperature is normal again after the lapse of thirty-six hours. Occasionally, however, the reaction may be delayed for a greater period than this, and not begin until thirty-six hours after the injection, and Hamman found in his cases that the longest time was thirty-six hours and the shortest four before reaction took place. The duration of the reaction, however, may be very much prolonged, in some instances extending as long as ten days, or even three weeks.

As a rule large injections produce greater reactions than small injections, although Hammer from an analysis of 180 cases concludes that the duration of the severity of the reaction bears no relation to the size of the dose.

In all patients the temperature alterations vary greatly, and so do the constitutional symptoms. These constitutional symptoms begin with the development of the temperature, and the patient usually feels well again when the temperature returns to normal, but it is nevertheless a fact that the height of the fever is no gauge as to the severity of the symptoms, since a patient having a comparatively slight febrile movement may suffer markedly from the other constitutional symptoms, which not infrequently resemble those of a more or less severe attack of influenza, consisting in headache and aching in the joints and limbs. Not rarely nausea and vomiting are also present, and at the point where the injection is given heat and hyperemia develop in most instances. The tuberculous focus itself, when it is in some portion of the body where it can be observed, also becomes hyperemic and may even go on to such a degree of inflammation as to result in sloughing of the part. When the lesions are pulmonary the physical signs in the chest reveal the fact that marked changes have taken place in the lung, râles have developed where they were previously absent, there is pain and increased cough and expectoration, and occasionally bloody sputum appears. Tubercle bacilli may appear in the sputum in cases in

which before the infection they could not be found.

Although those who have employed the tuberculin reaction are wont to tell us that when properly used it is not dangerous, there is nevertheless, and we think very properly, a feeling among the majority of the profession that the reaction may damage the patient, and Hamman asserts that Sahli of Berne for these reasons deliberately refuses to produce a reaction even for the purpose of establishing a diagnosis. This has been our attitude ever since tuberculin was first introduced as a diagnostic agent, and the readers of the editorial columns of the GAZETTE will recall the fact that we have repeatedly stated this to be our opinion, and have expressed the view that when a patient presents sufficient physical signs, or other symptoms, to lead the physician to the belief that he is probably tuberculous, it is better to treat him as a tubercular case, since under these circumstances no harm can be done, and if not tubercular he is certainly in a fair way to become so, the impaired lung being a ready field for the growth of the tubercle bacillus should it enter the chest.

It goes without saying that tuberculin should never be employed in cases of tuberculosis which can be diagnosed without its aid, and if this statement be admitted as correct it is practically equivalent to stating that the tuberculin reaction certainly is not in itself beneficial, and may be harmful. As Hamman well says, one cannot look with indifference on a reagent which may produce such intense constitutional symptoms and such prolonged periods of fever.

In regard to the dose of tuberculin it seems to be generally admitted, even by those who have used it largely, that it is quite impossible to tell beforehand what dose will be necessary to produce a reaction in a susceptible individual. It is therefore essential that a minimum dose shall be given at first, and if reaction fails to occur larger doses administered until they become so large that a failure to react may fairly be said to surely exist. In other words, the dose of tuberculin is like the dose of the

ordinary drug which is given for the cure of disease in that it must, as far as possible, fit the needs of the individual patient. While it is true that an ordinary minimum dose may be said to be one-fifth of a milligramme, patients have reacted typically to so small a quantity as 1/1000 of a milligramme.

Finally it is important to remember, as already stated, that the patient who receives tuberculin for diagnostic purposes will, if he has tuberculosis, suffer not only very distinct changes in the local tissues infected, but also from systemic symptoms which may be exceedingly annoying for a varying period of time. In other words, the patient should be told before the test is made of what he may have to suffer if the test is positive, and in some instances the importance of the test for the purposes of diagnosis should be carefully discussed with him in order that he may determine whether he is so anxious to have an absolutely certain statement that he is tuberculous as to be willing to feel more ill for a time than he feels when he consults the physician.

A negative reaction pointing to the fact that the patient is not tubercular is probably of more value, in many cases, than a positive reaction; that is to say, a failure to react to ordinary doses is a fair proof that tubercular infection is not present, whereas a positive reaction may occur from other causes than the tubercular focus.

The statistics collected by Hamman show that about 90 per cent of all suspected patients react, and 50 per cent of patients with diseases other than those who have tuberculosis, or who at least are thought not to have tuberculosis, manifest a reaction. This may be due, of course, to the fact that a number of these patients have unsuspected quiescent tubercular foci which are in no way manifesting themselves save that they cause a tubercular reaction to take place. In this connection it is interesting to note that Hamman found a number of patients who failed to react, although they had far more definite symptoms and signs of tuberculosis than many who did react. In other words, tuberculin does not

give an absolute certainty to a diagnosis, for reactions are prone to occur in syphilis and in a number of other conditions.

The scale of doses suggested by Hamman for adults is 1/5 to 1/2, or 1 to 5 milligrammes, and for children 1/10, 1/2, and 1 milligramme.

In connection with the so-called ophthalmotuberculin reaction we think we are stating the case fairly when we remark that the majority of ophthalmic surgeons are now distinctly opposed to the general employment of this test, since there are a number of cases on record in which very violent and even disastrous ocular changes have ensued. If the test is used and a positive result is found, it does of course possess diagnostic value, but it is important to remember that if tuberculin is dropped into the eye in minute quantity no reaction may develop, and when larger quantities are tried a positive reaction has no diagnostic import, since the earlier administration has produced a condition of hypersensitiveness which results in a positive test even if tuberculosis is absent.

The method of Pirquet, like that of Calmette, which consists in putting a drop of tuberculin on a spot on the skin which has been abraded, possesses the advantage that severe systemic reaction does not occur even in tubercular patients, although in these cases the area which is treated in the manner described usually becomes hyperemic in from eight to twelve hours, and may even go on to the stage of vesication. Sometimes this reaction, like that following the injection of tuberculin subcutaneously, does not occur for a day and a half or two days. Unfortunately, the method of Pirquet seems to be more liable to error than the hypodermic injection method or the ophthalmic method, for Pirquet himself noted that nearly every adult so treated had a local reaction, and recognized that it is only in infants or young children that this reaction possesses much significance.

Again, all these tests for tuberculin, as we have already said, may occur when lesions are so far advanced in the process of healing as to be practically of no importance

to the patient, and therefore it is possible that a positive reaction if solely relied upon might result in the giving of advice based upon the idea of the presence of an active process when the patient was really on the high road to recovery, and perchance had nearly reached complete convalescence.

In this connection it is interesting to note that Bonney in his recent book upon pulmonary tuberculosis agrees with the views that we have already expressed in regard to the unjustifiability of using tuberculin in every case. Speaking of its use by routine as being quite unnecessary and unwarranted, he puts the initial dose hypodermically as one-tenth of a milligramme for an adult, and believes that the legitimate scope of the tuberculin test when employed subcutaneously for diagnostic purposes is extremely small and its field of usefulness confined exclusively to a few doubtful cases otherwise incapable of precise determination.

DISEASED TONSILS: AN IMPORTANT FACTOR IN PREVENTIVE THERAPEUTICS.

About ten years ago the late Dr. F. A. Packard, of Philadelphia, contributed a paper, which at the time did not receive the attention that its importance deserved, in which he asserted that the tonsils were avenues through which takes place general systemic infection by a large number of pathogenic organisms. To-day physicians everywhere are fully alive to this fact, and recognize that large and diseased tonsils in children and in adults provide an open door, and indeed a constant resting-place or vestibule, for infectious organisms. In an interesting paper which is contributed to the *Boston Medical and Surgical Journal* of August 6, 1908, Sylvester once more calls attention to this important subject, and points out that the pharyngeal tonsil, so-called, contains a greater proportion of lymphatic tissue than the faucial tonsils, and is therefore more spongy in texture. It is usually enlarged when the faucial tonsils are enlarged, and through it infection by no means rarely occurs, since it is ex-

ceedingly vascular in addition to the large number of lymphatic vessels which it contains. It is through the tonsils that the tubercle bacillus has been proved to travel into the cervical and subclavian glands and so to the apex of the lung. Sylvester likens these three sets of lymphatic tissue to the Spartans of old at Thermopylæ, in that they defend the narrow passages into the lungs and general circulation, but unfortunately the simile ceases to be correct when these tissues are diseased. So soon as their defensive activity ceases they provide an open door for the entrance of the enemy. A number of years ago St. Clair Thomson, of England, asserted that from 30 to 80 per cent of all attacks of infection began through the tonsils, and acute articular rheumatism, or at least acute articular inflammation, often has its origin by this means, and it is thought by some that chorea, which is classed by many as an infection, also gains access to the body through this gateway.

When a study is made of the actual condition of the tonsils themselves it is surprising how often they are found to be actually diseased and to contain a host of pathogenic microorganisms. Thus, Grüber found in 760 cases of excision of the tonsils that 6 per cent of these glands were tuberculous, and Robertson in 232 cases found 8 per cent infected with the tubercle bacillus, while in 75 per cent of the cases the crypts emptying into the supratonsillar fossa were shown to be capable of furnishing infection. Westenhoeffer in 29 autopsies in cases of cerebrospinal meningitis found the pharyngeal tonsil in every instance swollen and full of pus. In addition to these cases we must recall the frequency with which the tonsils become infected by the staphylococcus, streptococcus, and pneumococcus, and furthermore it is interesting to note that Kretz found in 14 cases of acute appendicitis, which came to autopsy, every one was associated with or preceded by acute tonsillitis, and that streptococci were found in the tonsils and appendix, the organism gaining its access to the blood through the tonsils and so carried to the appendix. It is even be-

lieved by Sylvester that acute nephritis in children may arise from this cause. These facts serve to emphasize once more the necessity of paying attention to the tonsils, and of excising them when they are at all diseased for the prevention of more serious ailments. It also shows the necessity of investigating the condition of the tonsils in many cases of general or localized infection in other portions of the body when the avenues of entrance for the invading microorganisms are not at first manifest.

SPINAL ANESTHESIA.

On a number of occasions we have published in the columns of the THERAPEUTIC GAZETTE statements which have seemed to indicate that the employment of spinal anesthesia has a very limited range of usefulness, and that it is often productive of disagreeable and even dangerous symptoms. Personal investigation amongst surgeons in several large cities reveals the fact that they use it, if at all, in a very limited class of cases, and we think it a fair statement that the majority of Anglo-Saxon surgeons do not look upon its use with favor and rarely if ever employ it.

This has recently been brought forward in a symposium upon the production of anesthesia for surgical purposes which has been published in the *Medical Record*, and also by a paper contributed to the *Intercolonial Medical Journal of Australasia* of July 2, 1908. In the latter publication Morton reports a case in which gangrene of the foot followed the use of stovaine-adrenalin used for the production of spinal anesthesia. It is only proper to state, however, that the patient in this instance was a man of sixty-five, in a debilitated condition, who was also suffering from two chronic ulcers on the lower third of the left leg. There were, however, no varicose veins, and no cardiac lesions. Under spinal anesthesia the ulcers were excised and skin-grafting performed, 5 Cc. of a 10-per-cent solution of stovaine with $\frac{1}{2}$ Cc. of adrenalin (strength of solution not stated) being injected. There were no im-

mediate unpleasant after-effects, but four days after operation a purplish vesicle developed on the sole of the foot, and two days later a similar patch of necrosis developed near by. The parts became black and necrotic, and separated slowly as a slough. The skin-grafts which had been made in the area of the original ulcers, however, healed perfectly. Goldmann is quoted in the *Medical Annual* of 1908 as having reported a case of gangrene of both heels following the injection of 2 Cc. of "novocaine-suprarenin" in a patient aged fifty-two, who was otherwise healthy except for a moderate degree of arterial disease.

Per contra, in the London *Lancet* of October 24, 1908, Sabadini reports the results which he obtained in 679 operations performed under spinal anesthesia produced by either cocaine or stovaine. He asserts that spinal cocainization is absolutely free from danger, and that it may be employed from ten years of age up to extreme old age for all operations on parts below a line running horizontally two fingerbreadths below the breasts, or at about the level of the eighth rib. The unfavorable opinions which have been expressed concerning its employment he thinks are unjust, and without sufficient basis. In 108 cases in which he used stovaine, the ages of the patients varying from sixty-eight to seventy-one years, in doses varying from 5 to 10 centigrammes, he found that the duration of the anesthesia was from 10 to 100 minutes. Vomiting occurred in only eight cases during the operation, and in six after the operation, and pain in the back was complained of only once. There was a slight rise of temperature twelve times. Difficult urination was complained of in several cases, lasting for from twenty-four hours to ten days, and in one case there was anuria for twenty-four hours following the injection of ten centigrammes of stovaine for an operation on hemorrhoids. In five instances the anesthesia was incomplete. When these results with stovaine are compared to his results with cocaine we find that vomiting was more frequent with the latter drug than with the

former. In 7 per cent of the cocaine cases there was sweating, and in about 15 per cent nausea, which did not, however, last for any length of time, and he has found when cocaine is used that the frequency of nausea is diminished 50 per cent by giving the patients their breakfasts before making an injection. He has never noticed any grave accidents under cocaine which he thought were really ascribable to the drug, but he believes that advanced cachexia, scanty urinary secretion, myocarditis, pericarditis with effusion, and non-compensated cardiac affections are pathological conditions which positively prohibit the use of cocaine. The most resistant subjects to this method of anesthesia were alcoholic and nervous patients, and in this type he has found it occasionally necessary to employ chloroform. He admits that one disadvantage in this method is that consciousness is not destroyed.

Although Sabadini's results are so encouraging we still adhere to the expression of opinion with which this editorial opens.

THE RELATIONSHIP OF "TYPHOID CARRIERS" TO THE PREVENTIVE TREATMENT OF TYPHOID FEVER.

We have repeatedly called attention in the editorial columns of the GAZETTE to the importance of preventing the spread of typhoid fever by the careful disinfection of the convalescent's urine and feces and to the fact that by reason of the prolonged existence of typhoid bacilli in the gall-bladder patients who have suffered many months or years before from typhoid fever may still be distributors of the infection. The celebrated New York case of a woman who had produced epidemics during a period of years all the way from Maine to Long Island, New York, was quoted as an instance of how such infection might be spread about. It is interesting to note in this connection that in the *Boston Medical and Surgical Journal* of July 16, 1908, Gregg, of the Laboratory of Hygiene of

the Harvard Medical School, records the case of a woman who was a "typhoid carrier" fifty-two years after her own recovery from typhoid fever, and who produced seven cases of typhoid fever in a period of about two and a half years amongst boarders in her own house. An examination of her stools showed that they contained a bacillus which responded to all the tests characteristic of the typical typhoid organism. As Dr. Gregg well says, "this patient is entitled to the distinction of having established a new record for 'typhoid carriers.'"

A SYMPOSIUM UPON ANESTHESIA.

In the issue of the *Journal of the American Medical Association* of November 7, 1908, there are a number of papers upon this well-worn but ever interesting subject which discuss it from the standpoint of the physiologist, the general surgeon, and the specialist. With most of the views which are expressed therein we feel certain that all practitioners will be in hearty accord, although the idea that is advanced to the effect that spinal anesthesia is a very valuable method in a large proportion of cases is not in accord with our own view. There are one or two points which seem to us of particular interest. Thus, the advice is given that should an accident occur during the administration of chloroform, 1 to 2 Cc. of adrenalin (1:1000), with salt solution, should be injected by means of a cannula into an artery "directed toward the heart," this method apparently being based upon Crile's well-known experiments. There is, however, a difference between the condition ordinarily present in human beings and that existing in the animals observed by Crile. It is manifest, that the injection of any solution *against* the flow of blood in an artery cannot by any means arrive at the heart any more rapidly than if it is injected *with* the flow of the blood in the artery. For an injection to reach the heart when injected into an artery against the direction of the blood

stream it is necessary that the circulation should have stopped and that an artery be employed which is so close to the heart that the fluid has to go a short distance to reach this viscus. To inject the fluid into the radial artery, as advised in the article quoted, when the blood is still flowing, as it is still flowing in most cases of chloroform accident, would not be particularly advantageous.

With the advice that "every operating room in which chloroform is administered should be equipped with the paraphernalia for the use of adrenalin and salt infusion" we heartily concur, 1 to 2 Cc. of a 1-to-1000 adrenalin solution being used with the normal saline.

There is another conclusion, however, which we do not think should be allowed to pass without contradiction. This is embodied in the statement that "all of the accidents of chloroform are due to overdosage." Of course, any healthy person who receives a dose of chloroform which is sufficient to produce death may be said to have received an overdose, be the size of the dose what it may, but in the great majority of instances where chloroform accidents take place the patient is not healthy, and it needs but a very small quantity of this powerful drug to destroy the vital balance. As it is well recognized by all the contributors to this symposium that chloroform is not the safest anesthetic, the assertion just quoted cannot be allowed to pass unchallenged; the more so since if it were cited in a court of law it might be used with disastrous effect against a practitioner who had employed all reasonable precautions in the administration of the drug. That such a sweeping statement is incorrect is not only obvious to all who are acquainted with the action of this drug and the accidents which have occurred under it, but is proved by the fact that the same author immediately proceeds to state that it is "a notorious fact that clinically the majority of deaths from chloroform occur in the early stages of anesthesia and after a few drops have been sprinkled on the cloth."

The advice that it is exceedingly dangerous to overcome struggling in the early stages by pushing the chloroform is excellent and is becoming more and more generally recognized.

TREATMENT OF ANURIA.

The well-known fact that in patients not previously subject to the effects of prolonged renal incompetence, or at times even in such patients anuria may persist for days or even weeks without being followed by death, is possibly responsible for the too general belief that suppression of the renal function is of itself not necessarily a surgical crisis, and that a prolonged course of medication having for its end the stimulation of the secretory function of the kidney, and particularly an increase in general vasomotor tonus, is justifiable before resorting to mechanical means.

Kümmel gives an excellent summary of the entire subject in his paper before the First National Congress of Urology. Anuria, as the term is generally used, implies a condition in which no urine reaches the bladder. This does not necessarily mean that none is secreted, since if the ureters or pelvis are obstructed there may be a copious secretion attended by dilatation. This is very properly called false anuria by Casper, whilst renal anuria is applied to the condition in which no urine is secreted by the kidney.

The usual cause of false anuria is blocking of the ureters or pelves by calculi, this in turn leading to hydronephrosis and ultimate atrophy of the kidney by compression. Very exceptionally similar obstruction may be brought about by tumor of the pelvis, of the ovaries, and most often by the extension of carcinoma from the uterus.

Renal anuria is caused by diffuse nephritis, tumors of both kidneys, especially cystic degeneration, malignant growths and double ascending hydronephrosis, disease of one kidney coexisting with general or acquired absence of the other kidney, and the renal reflex. This renal reflex is usually

manifested in cases suffering from obvious and well-demonstrated renal lesions. A renal suppression of purely peripheral origin is described, but is extremely rare. Casper reports a case in a child two days old, incident to tight phimosis.

Kümmel notes that usually when anuria develops with one presumably healthy kidney, if opportunities for thorough examination be given, this latter organ will be found to be diseased to some extent, and such disease renders it far more vulnerable to reflex influence. None the less, he admits that a suppression may occur in the kidney which most careful examination shows to be completely normal. Guyon has noted that a reflex of vesical origin may be an adequate cause of renal anuria, basing this opinion upon a case in which instillations of concentrated silver nitrate caused suppression which lasted for five days and then disappeared spontaneously. The effect of powerful peripheral stimulus upon the kidney circulation is shown by the experiments of Cohnheim and Roy, who by irritating the divided central end of the sciatic nerve produced absolute anuria and such a contraction of the vascular structure that the organ was 10 per cent smaller than before this experiment was performed. It is further evident that anuria may be of psychic origin, as is proven by cases of hysterical anuria.

As to the treatment of anuria, the hysterical form, the diagnosis of which must be based on associated symptoms of the condition with the exclusion of organic lesions, may be either due to primary vasomotor disturbances or to spasmodic contracture of the ureter with consecutive reflex spasms of the renal vessels. The treatment, when the condition persists so long as to be threatening, lies either in the administration of an anesthetic or the insertion of a ureteral catheter. Casper treated in the latter manner a patient who had had complete suppression for ten days, placing a catheter in each ureter. This was followed by an almost immediate reappearance of the secretion.

Charcot's case, which lasted for eleven days, was cured by the administration of chloroform. The prognosis of these cases is usually excellent.

If the anuria is due to calculus, operative treatment at the earliest moment is indicated, unless the occluding body be shown by the *x*-ray to be small. Under such circumstances a reasonable time may be allowed to elapse in the hope that it may spontaneously pass into the bladder, or by means of a ureteral catheter it may be dislodged upward into the pelvis. It should not be forgotten that even though the symptoms are one-sided the cases of calculous anuria are usually evidence of bilateral lesion. If renal anuria be purely a renal reflex, the dislodgment or the removal of the obstruction on one side may be sufficient to establish the secretion. If the anuria is of the false and obstructive variety on both sides, a bilateral surgical procedure may be needful. In cases of renal anuria due to nephritis in any of its forms, incision of the renal capsule or nephrotomy is indicated. The reflex anuria of peripheral origin is best dealt with by removal by medical or surgical means of the cause of the vasomotor spasm.

DIAGNOSIS AND TREATMENT OF DUODENAL ULCER.

Because of the insistence of surgeons upon this point, relative to the fact that only the uncured cases of gastric and duodenal ulcer come under their observation, there is a growing feeling in the profession at large that, as in the case of appendicitis, the indication for operation is afforded by a reasonably sure diagnosis. The question of diagnosis when the ulcer neither causes obstruction nor is attended by bleeding is one extremely difficult of solution. It is well proven by the records of perforations that such ulcers may exist and cause no symptoms sufficiently pronounced to suggest to the patient that he is even suffering from noteworthy indigestion. In so far as we know, as a rule these

ulcers do cause definite symptoms. In the case of duodenal ulcer there is localized tenderness, pain, occasionally with an area of superficial hyperalgesia, often the associated symptoms of duodenal catarrh, and blood in the stools and the stomach contents, as a rule occult. Moynihan (*Surgery, Gynecology, and Obstetrics*, October, 1908) attaches particular importance to the history. He states that neither alterations in the size or action of the stomach nor chemical changes in its contents are of equal value. The typical description of symptoms given by the patient is as follows: After food is taken there is freedom from pain for the period of an hour or two, being the best time in the day. At a time varying from one-half to four hours after the meal a sense of uneasiness is noted in the upper part of the abdomen. There is a burning, gnawing sensation; often eructations of food or gas, bitter and acid in taste. Pain, which gradually increases, may be relieved, often considerably, by belching or by pressure. As it increases in severity it strikes through to the back, to the right of the middle line, and may radiate around to the right side of the chest. Many of these patients carry a biscuit in their pockets, or take milk or doses of alkaline medicine as soon as the uneasiness develops, since this gives relief. In severe cases the pain may simulate in intensity that of a mild form of hepatic colic. This suggests the possibility of associated pyloric spasm—indeed, such a condition is seen at times during the course of the operation. Since the pain comes at the time when the patient should be beginning to feel hungry for his next meal, it is aptly termed "hunger pain." The interval of relief after the meal varies according to the character of the food taken, the more substantial the food the greater the interval of relief. The appetite is generally good, and is often better than normal if stenosis has not developed. Vomiting is exceptional.

Moynihan states that if such a history of pain be given one may be confident that there is a duodenal ulcer without stenosis. Investigation by test meal will show no stasis, and perhaps, though not always,

hyperacidity. After a period, varying from weeks to months, symptoms may improve or even disappear, to reassert themselves after longer or shorter intervals. Between the intervals of attack the patient may be perfectly well, suffering absolutely no discomfort, enjoying food and gaining weight. The attacks are more frequent and more distressing in cold weather and are often attributed to chill. They are also aggravated by stress or worry.

Moynihan regards duodenal ulcer as a far more serious disease than gastric ulcer, and holds it should always be treated by operation. Gastroenterostomy should be performed, and, when this is practicable, it is desirable to infold the ulcer. The posterior no-loop method should be chosen with the almost vertical application of the bowel to the stomach. The vertical position is that into which the jejunum falls most easily in the normal position of the body. A deviation to one or other side, if slight, is of no importance.

The loop operation may be followed by regurgitant vomiting, which in turn is cured by enteroanastomosis. Vomiting of bile may be relieved by lavage, and in some patients disappears entirely after the lapse of weeks or months or even years.

As to the result of his experience in the surgery of benign disease of the stomach and duodenum, he states that surgical measures have been attended by a small mortality and relief has been complete and permanent. In cases in which the evidence of structural disease was insignificant, or absent, the result has been indifferent or positively bad.

Moynihan also points out that, however careful our preliminary investigations may be, we shall from time to time display upon the operation table a perfectly normal stomach. In this case he particularly warns against endeavoring to cover a diagnostic disaster by the performance of an unnecessary operation, since to practice a gastroenterostomy in such cases has been proved to lead to unsatisfactory results, whereby the operation is discredited.

REPORTS ON THERAPEUTIC PROGRESS.

BENZOIC ACID AS A FOOD PRESERVATIVE.

The *New York Medical Journal* of August 15, 1908, calls attention to the fact that there has recently been issued by the Bureau of Chemistry of the Department of Agriculture the fourth part of a report entitled "Influence of Food Preservatives and Artificial Colors on Digestion and Health." It is a brochure of rather more than 250 pages, prepared by the chief of the bureau, Dr. Harvey W. Wiley, with the collaboration of several members of his staff. It deals with benzoic acid and the benzoates employed as preservatives. The investigations on which it is founded have been largely experimental, the so-called "poison squad" having been made use of. Eighteen tables are given in this section of the report, which in its entirety constitutes Bulletin No. 84.

The general conclusion arrived at is that the continued ingestion of benzoic acid, either free or in combination in the form of sodium benzoate, "is highly objectionable and produces a very serious disturbance of the metabolic functions, attended with injury to digestion and health." As is the case with boric acid, salicylic acid, and sulphurous acid, the injurious effects include grave derangements of digestion, attended by phenomena indicative of irritation, such as nausea, headache, and in a few cases vomiting. In the experiments these results were observed in healthy individuals living on good and nourishing food and under proper sanitary conditions. It is argued, therefore, that the effects noted would be more pronounced and more enduring in weak persons or in those of impaired health.

It was observed that the subjects of the experiments lost flesh distinctly, and this fact is held to indicate either defective assimilation of food or increased recrementitious processes. It is declared that the influence of benzoic acid and sodium ben-

zoate upon metabolism was in no instance of a favorable character; while the changes were in many cases not highly pronounced, they were always of an injurious nature. Nature's efforts to eliminate these substances, it is remarked, are corroborative of the deductions mentioned. By these efforts benzoic acid, so far as possible, is converted into hippuric acid and so excreted, but there is a tendency to retain benzoic acid and especially sodium benzoate in the system for a notable length of time. The injurious effects are more rapidly produced when benzoic acid is administered as such than when sodium benzoate is given, but eventually the deleterious action is the same; consequently the use of the benzoate as a preservative is really no more defensible than that of the uncombined acid.

TREATMENT OF SOME OF THE SEVERER FORMS OF HEADACHE.

HARRIS writing in the *British Medical Journal* of August 8, 1908, reminds us that true migraine is the most important and the commonest of the causes of periodic headache, and the writer has been gradually forced to the conclusion that the actual cause of the severe pain in the head is raising of the intracranial pressure, and that the headache, while it lasts, is precisely similar both in its mode of origin and general characters to that met with in cerebral tumor. The commencement of an attack with sudden hemianopia, or with general dimness of vision of both eyes, often followed by numbness and tingling in the tongue and cheek, or one arm, perhaps accompanied by temporary aphasia, is most suggestive of sudden arterial constriction on the cortex, sometimes unilateral, sometimes on both sides. During this preliminary stage, which lasts from ten minutes to half an hour, there is no trace of headache, but only symptoms of interference with the cerebral functions, such as confusion of

ideas, visual auræ, and sometimes olfactory or even psychical auræ. Presently, headache commences, often on one side at first, but more usually over the whole head eventually. Primary arterial spasm in the brain is further suggested as the initial event in migraine by the visible narrowing of the arteria centralis retinæ, as has been seen with the ophthalmoscope, and also the general pallor of the face and neck. Later, with the headache, flushing is common, with forcible throbbing of the carotid on the side of the commencing headache, with now a dilatation of the arteria centralis retinæ. The intense headache usually lasts several hours, and is often accompanied by vomiting, which symptom is one of the most characteristic signs of raising of the intracranial pressure. The vomiting may occur within an hour of the commencement of the attack, but more usually it is delayed until near the end. In other cases the sickness may continue for hours, bringing no relief.

It is common knowledge how unsuccessful we are in relieving true migraine by the ordinary antineuralgic remedies, such as antipyrin, phenacetine, and similar drugs. What partial success they achieve in a few cases is, the author believes, due to their depressant action upon the heart, thus lowering the general blood-pressure, and for this comparatively large doses are required. Each and every one of them has had its advocates for the relief of migraine, but the writer is convinced that the cases which are quickly and certainly relieved by this class of drug are neuralgic headaches, not true migraine. The author holds that the pain in migraine is produced by an increase of the intracranial pressure, brought about in the first instance by arterial dilatation of certain cortical and meningeal areas, a vascular dilatation which succeeds the primary vasomotor constriction which surely occurs in this disease.

To relieve the pain of migraine we must apply remedies which will lower the intracranial pressure, proceeding upon the same lines as we should for the relief of the headache in cerebral tumor or acute meningitis. We may divide our available remedies into two classes:

1. Local, trephining and opening the dura; lumbar puncture; leeches to the scalp; fomentations, hot bottles, or ice-bag to the scalp and neck.

2. Indirect, by lowering of the general blood-pressure; nitroglycerin and the nitrites; cardiac depressants such as opium, aconite, chloral, phenacetine, antipyrin, and other coal-tar analgesics; purgations, diaphoresis, hot bath.

The operation of trephining has, the author believes, never been done for the relief of migraine, though he has known it done several times for the cure of neurasthenic headache. He believes the operation would be justified in those severe cases of frequently recurrent migraine in which the unfortunate patient is prostrated for one or more days every week or so by the intense headache and sickness. Before this is seriously thought of, leeches to the scalp should be applied at the commencement of the headaches, the patient given ten grains of Dover's powder, with a hot drink containing one-sixth of a grain of pilocarpine. The patient should be kept lying down, warmly wrapped up, so as to promote perspiration, and under this treatment the author has noted great and speedy relief afforded.

[The proposition to trephine for migraine and the use of pilocarpine strikes us as being heroic and a method of treating symptoms and not causes.—Ed.]

ANESTHETICS FOR THE RUPTURED AND CRIPPLED.

GIBNEY in the *Medical Record* of August 15, 1908, in speaking of his use of anesthetics in this class of patients states that the agents employed at present are, in order of their frequency: (1) ether, (2) nitrous oxide, (3) ethyl chloride, (4) somnoform, (5) chloroform. Prior to 1904 nitrous oxide was used to precede ether, and since that year ethyl chloride has almost supplanted the nitrous oxide as a preliminary agent. This is employed in the wards as a local anesthetic and for minor operations on the older children and on adults, while ether to the primary stage is used in the very young children. Somnoform was used for a short

period, but was discontinued because it was found to possess no advantage not possessed by ethyl chloride, and because it was regarded as dangerous. Chloroform is rarely used at all, and only when ether is contra-indicated.

Methods.—They begin with ethyl chloride in either the Esmarch or Bennett inhaler, and ether soon follows with the same inhaler, the towel cone, or the drop method. The amount of ether required is from 5 to 6 Cc. in children, 8 to 9 Cc. in adults. The time required for full anesthesia is from two to three minutes with the Bennett and from four to five minutes with the Esmarch or with the drop method. During the last year and a half, morphine $\frac{1}{4}$ grain and scopolamine 1/100 have been administered fifteen or twenty minutes before ether anesthesia is begun, in about thirty adults, with very happy results. One-third the amount of ether was necessary. The duration of anesthesia in orthopedic operations is usually from five to twenty minutes, occasionally from one-half hour to one and a half hours, but these long operations are exceptional. The hernia operations occupy from eight to fifteen minutes, except in cases of double ventral or umbilical, which last from forty minutes to one and a half hours.

THE INFLUENCE OF ALCOHOL.

DAVIES in the *British Medical Journal* of August 8, 1908, asserts that, as an article of food, alcohol cannot be considered necessary, or even advisable, merely from a dietetic point of view. There are some special conditions that need to be considered in regard to its use, especially from a military service standpoint: these are (1) extremes of heat and cold; (2) excessive labor, bodily or mental; and (3) the peculiar fatigues and exposures incident to war.

1. As to great cold, opinion is unanimous amongst the well-informed that all alcohol is more or less hurtful; spirits are the worst, but even light wine or beer is not to be recommended. The experience of arctic voyagers and of Alpine guides is singularly concordant as to this. Sir John Ross wrote:

"The most irresistible proof of the value of abstinence was when we abandoned our ship, and were obliged to leave behind us all our wine and spirits. It was remarkable to observe how much stronger and more able the men were to do their work when they had nothing but water to drink." Dr. John Rae maintained that "the greater the cold, the more injurious is the use of alcohol."

As to great heat, the evidence is equally conclusive; the strongest liquors are the most hurtful, greatly predisposing to heat-stroke and diseases of the liver. In former years, in India, a very great deal too much alcoholic liquor was consumed. Every soldier had a right to purchase at the canteen 2 drams of spirits, generally rum or arrack, supplied by the commissariat department; 2 drams were equal to 8 fluidounces. Many men drew only one dram of spirits—that is, four ounces—and took out the other dram in the shape of a quart of beer. The amount of disease ascribed to intemperance was described by Dr. J. Maclellan (1863) as "something appalling;" one-tenth of all the admissions to hospital for sickness in Bombay were on account of delirium tremens or drunkenness; the numbers admitted for these causes were greater than for any other disease, except fever; and as to deaths, "alcohol destroyed more than either fever, hepatitis, or diarrhea, and nearly as many as cholera."

2. Exertion of the body is better borne without than with alcohol; this has been proved most conclusively. As a restorative after fatigue, and as a spur to special exertion for a short time, a small quantity of alcohol may be useful, but reaction is sure to follow. A German observer, Schneider, has recently (1907) examined 1200 mountain climbers, and found that, according to their testimony, as long as continuous efforts and difficulties are to be expected no alcohol should be taken. Only for a special effort of mind and body (as for overcoming a final obstacle) may a dose be admissible. In descending, when all difficulties have been overcome, many mountaineers find a small dose of brandy a restorative.

In mental work it is very doubtful if alcohol is of any service, except in cases of great exhaustion from want of food, when alcohol does revive mental power, probably by increasing the blood supply to the brain.

3. In the exposures and fatigues of war it has been demonstrated that alcohol is quite unnecessary to enable troops to support them effectively and cheerfully; nor are they endured any better when alcohol is consumed, but on the contrary worse. The experiences of the British forces in Egypt in 1800, when a body of troops under Sir David Baird marched across the desert from the Red Sea to the Nile (Kosseir to Kenh); of the Red River expedition in Canada in 1870; of the Ashanti campaign in 1874; and of the Nile expedition in 1885—the three latter under Lord Wolseley—all prove that very great exertion and exposure to extremes of temperature can be better borne without alcohol than with it, and that arduous campaigns can be carried on without the use of alcoholic drinks of any kind. The campaigns quoted include instances of extreme heat (Egypt, 1800 and 1885), extreme cold (Red River), and a most malarious climate (Ashanti, 1874). The bodily exertions undergone by the troops in the Red River and Nile expeditions were undoubtedly extreme. There are circumstances in which a small spirit ration may be of benefit—as toward the end of a long march, when it is an urgent matter to reach camp before dark. The issue of a very small alcohol ration may then enable troops to do in a short time what would otherwise take longer. But the dose must be small, and must be administered very near the termination of the work to be done; otherwise reaction will certainly set in, and no benefit will result.

LUMBAR ANESTHESIA.

The *Medical Record* of August 15, 1908, points out that lumbar anesthesia has found great favor in Germany, surgeons of such standing as Bier, v. Rosthorn, Witzel, and Sellheim using it continuously in their practice, and studying the value of the various modifications of the methods, as well as of

the drugs used in this connection. The amount of material observed may be judged from an article by Dr. Holzbach in the *Münchener medicinische Wochenschrift* of July 14, 1908, which gives the experience obtained from over one thousand lumbar anesthetics, two-thirds of which were employed for the performance of laparotomies. Holzbach says that the following points must be fulfilled by any anesthesia, whether local or general: Absolute freedom from pain during the whole duration of the operation; such effect upon the tissues of the operation field that the technique of the procedure is rendered as easy as possible; the smallest possible danger from the use of the anesthetic during and after the operation; the absence of unpleasant sensations at the beginning of the anesthesia and following it; the least possible influence upon the post-operative course of the disease.

So far as the first requirement is concerned, lumbar anesthesia is not as reliable as inhalation narcosis, in every case of which complete freedom from pain may be promised to the patient. Of some 250 specially studied cases, in nine lumbar anesthesia proved to be a complete failure, in a few others the course of the operation was disturbed, in still others, amounting to 16.4 per cent, ether or chloroform had to be used to complete the narcosis begun by the lumbar injection. The second condition is fulfilled by the newer method of narcosis much better than by the old; muscular relaxation is much earlier attained and the involuntary spasms of the diaphragm affecting the contents of the peritoneal cavity are very seldom observed in lumbar anesthesia. Moreover, the surgeon need no longer divide his attention between the operation itself and the anesthesia; there is no occasional choking, no vomiting, no falling back of the tongue, no such danger of sudden death from paralysis of the respiratory center. On the other hand, various trophic disturbances, transitory albuminuria, even inflammation of the kidneys, obstinate pain in the head and neck are still quite frequent sequences of lumbar anesthesia, though with the improvement in technique they are observed

much more rarely than formerly. So far as freedom from unpleasant sensations and feelings in the beginning of the narcosis is concerned, the use of morphine in connection with the anesthesia allows the attainment of this end in either type of narcosis. As this seems to be less dangerous in the case of lumbar anesthesia than with the use of ether or chloroform, which of itself has a dangerous effect upon the respiratory and circulatory centers, the former method enjoys some advantage over inhalation anesthesia.

The postoperative course, the last point considered by Holzbach, is certainly less disturbed in the case of lumbar narcosis; vomiting is extremely rare, lung complications are also infrequent, and the patient may be allowed to leave the bed in much shorter time than is usual with the employment of ether or chloroform. The one desideratum, according to Holzbach, is the care in the details of the technique of producing spinal anesthesia, and to obtain this one who has made a special study of the art and practice of this field of medicine should be called upon to perform the work. The latter suggestion applies to inhalation narcosis, perhaps, as much as to the newer methods of anesthesia. The technique of inhalation narcosis is, however, so much simpler than the puncture of the spinal canal required in the production of lumbar anesthesia that the former method will always be preferred in emergency work and in those hospitals where the untrained internes are required to administer the anesthetic.

How far the newer method will supplant the old in selected cases and in the presence of special arrangements for its successful use remains to be seen. In a private letter from Berlin it is stated that general narcosis with ether or chloroform has almost entirely been given up in the clinics under the direction of Professor v. Bier, lumbar narcosis or local anesthesia produced by injections of narcotics being used. The advantages claimed for the latter methods are such as to warrant a trial by American surgeons on more extensive scale, so that they may de-

cide for themselves how applicable it is to the different conditions which govern surgical practice on this side of the ocean.

THE OPSONIC INDEX AND THE USE OF TUBERCULIN.

FOWLER, in the *British Medical Journal* of August 1, 1908, says that the effects of a prolonged and careful trial of tuberculin in cases under the care of eight physicians at the Brompton Hospital may be thus summarized:

1. Tuberculin, if introduced under the skin, speedily causes inflammatory changes in and around tuberculous lesions.

2. The action of tuberculin in lung tuberculosis is to cause breaking down of the tuberculous masses and of the lung tissue in the neighborhood, and thus to promote the formation of cavities. That this is the case is proved by the appearance of lung tissue in the sputum, where it was previously absent, and by the physical signs of cavity replacing those of consolidation.

3. Tuberculin increases the amount of expectoration, but there is no proof that it diminishes the number of tubercle bacilli contained therein, for in some of the cases they apparently increased under its use.

4. In many cases tuberculin injections are followed by a distinct extension of disease as evidenced by physical signs.

5. The reactions due to tuberculin are exhausting to the patient and cause loss of weight and strength.

6. This treatment is specially contraindicated in lung tuberculosis accompanied by pyrexia, as likely to convert intermittent into continuous pyrexia.

7. Lung excavation accompanying the use of tuberculin may be followed by contractile changes due to fibrosis. This was shown in two of the cases under observation in which diminution of cough and expectoration and gain of weight took place.

8. The tuberculin did not favorably influence the course of the disease in the majority of cases, in some the effects were detrimental, and even in the stationary and improved cases it was difficult to ascribe

any distinct improvement to the injections which might not have been equally attained under the treatment ordinarily used in the hospital.

PNEUMONIA IN CHILDREN.

DUNLOP in the *British Medical Journal* of August 15, 1908, states that he knows of no disease of childhood where treatment judiciously carried out is more efficacious than in bronchopneumonia. By avoiding, on the one hand, unnecessary interference with nature's efforts to bring about a natural cure, and by stepping in and giving judicious assistance and help when these natural efforts require stimulation, very much can be done to tide the child safely through the many dangers and sudden emergencies to which he is liable.

The chief aim is to put the child into the best position to withstand the disease, and the indications for treatment are, therefore: First, to endeavor to prevent the digestive organs becoming deranged; secondly, to do all in our power to maintain the strength and vitality of the patient; thirdly, to keep the action of the heart constantly under observation; and fourthly, to prevent, if possible, the spread of the inflammation to fresh portions of lung.

A supply of pure air is one of the most important considerations, as one of the main causes of death is carbonic acid poisoning. All the cases of the author have been treated in a large, airy ward, kept at a uniform temperature, with abundant cubic space and cross-ventilation. He considers the system of treating these cases in the open air undesirable, as he cannot believe that the inhalation of a cold, damp, raw air acts beneficially upon an acutely inflamed mucous membrane.

The feeding was carefully attended to, and the bowels regulated so as to try and avoid diarrhea and flatulent distention, which adds so greatly to the respiratory embarrassment. The diet consisted chiefly of milk modified to suit the age and requirements of the child, chicken and mutton broths, and, if the child could digest them, simple milk puddings. Frequent draughts of cold water were always allowed. The

clothing consisted of a gamgee tissue jacket and a loose flannel night-dress, so as to allow the movement of the chest walls to be absolutely free and unimpeded.

His practice has been to surround the upper half of the crib with a tent, open in front so as to permit the free access of air. Inside the tent are hung towels wrung out of a solution of one part of eucalyptus oil to five parts of water. He is convinced that the evaporation of the moisture and the volatilization of the oil has a soothing effect on the inflamed mucous membrane and greatly diminishes the cough, and it is possible that its antiseptic action may tend to prevent the spread of the pneumonia to fresh portions of lung. He instructs the nurse to change the position of the child in its crib frequently, and from time to time to take it up and carry it up and down the ward, to avoid the risk of hypostatic congestion.

The writer is a believer in the application of lightly made jacket poultices of one part of mustard to four or five of linseed meal, and applied three or four times a day for periods of a few minutes at a time. They redden the part, bringing the blood to the surface, act as a stimulant, relieve pain, and seem to be comforting to the child. He generally continues these applications for a week or ten days, or longer if required, at the commencement of an attack of pneumonia. In spite of much that has been said and written to the contrary, he considers that alcohol is the drug upon which we have principally to depend in the treatment of bronchopneumonia. He believes that the great majority of cases require alcoholic stimulation. As a rule it is unwise to commence giving alcohol early in the disease, but it should be reserved until symptoms indicating prostration and lowering of the vital powers manifest themselves. When such symptoms arise alcohol frequently acts like a charm, strengthening and steadying the pulse, lessening the cyanosis, reducing the temperature, increasing the vitality, and, most valuable of all, procuring a much needed sleep. A few years ago, on the advice of a friend, whose opinion he valued

highly, he discontinued for some time the administration of alcohol—an experiment he has never failed to regret, as his results were not nearly so satisfactory during that period. He gives whisky in doses of 15, 30, or 40 minims, according to the age and condition of the child, every two or four hours, and once its administration is commenced he generally finds it necessary to continue it until convalescence is established. In all cases he gives strychnine in minim doses of the liquor every four hours as a routine practice. It acts as a cardiac and respiratory stimulant, as a stomachic and nerve tonic, and it seems to help the contraction of the muscular walls of the bronchi and thus assist the expulsion of the mucus. The only cases in which he omits the strychnine are when diarrhea occurs and when there is marked respiratory stridor.

When signs of advancing cardiac strain make their appearance, evidenced by irregularity of the pulse and increasing cyanosis, to the strychnine the author adds one-minim doses of tincture of strophanthus, finding by experience that strychnine and strophanthus better maintain the blood-pressure than digitalis, and they have no injurious effect on gastric digestion. He is a firm believer in the efficacy of the inhalation of oxygen, and has frequently been amazed at the improvement in the child's condition which followed its administration, the breathing and color improving and the somnolence and cyanosis becoming much less marked. He regards it as a valuable remedy in the treatment of these symptoms. The only means he advocates for the reduction of high temperature are tepid sponging and the cold pack. When sudden collapse of a portion of the lung sets in, he relies upon free alcoholic stimulation and placing the child in a mustard bath. He has entirely given up the administration of cough mixtures, having seen little good result from them, and considers that they are very liable to upset the child's digestion, which it is so important should be kept undisturbed. When the bronchi are choked with secretion and the child is strong, an emetic of ipecacuanha often gives great re-

lief, and failing that, he has occasionally seen exceedingly good results from the administration of belladonna.

THE LEUCOCYTES IN DIPHTHERIA BEFORE AND AFTER ADMINISTRATION OF ANTITOXIN.

KARSNER in the *University of Pennsylvania Medical Bulletin* for September, 1908, after reporting some experimental investigations reaches the following conclusions:

1. Diphtheria is accompanied by a varying degree of hyperleucocytosis, usually moderate. Occasionally, hyperleucocytosis may be absent in extremely toxic or extremely mild cases.

2. The differential counts in the leucocytoses of diphtheria show proportions of polymorphonuclear and mononuclear cells quite consistent with the grade of leucocytosis. In these leucocytoses the eosinophiles are present in unusually small numbers, and the myelocytes, basophiles, in moderately small numbers.

3. Neither the degree of leucocytosis nor the proportions of any of its constituent types of cells indicate, except within very broad general lines, the severity of the infection or the outcome of the disease.

4. The administration of antitoxin has no appreciable effect on the degree of the leucocytosis, the proportions of its constituent types of cells, or the staining reactions of these cells in dry preparations, stained either by Wright's method, Ehrlich's triacid mixture, or hematoxylin and eosin.

CHANGES IN THE NERVOUS SYSTEM AFTER STOVAINE ANESTHESIA.

The *British Medical Journal* of August 22, 1908, gives us the information that Spielmeyer has examined histologically the nervous system of thirteen persons who died after the injection of stovaine into the lumbar canal. He states that his investigations have not been undertaken with the idea of deciding whether lumbar anesthesia with stovaine, or with any other substance, is a safe procedure—a question which must be

decided by clinicians. Of the thirteen persons examined seven had received doses varying between 0.1 and 0.12 gramme, and the remaining six received from 0.05 to 0.07 gramme. Stovaine was the direct cause of death in one case, a decrepit woman suffering from total prolapse of the uterus. A second patient died one and a half years after the injection of 0.12 gramme, while all the others died of causes independent of the anesthesia between two and eight days after the operations. The necropsies were carried out within a few hours of death, and portions of the brain, medulla, and spinal cord were fixed and stained by Nissl's granule method, Bielchowsky's fibrillæ method, and Marchi and Weigert's nerve sheath method. Nissl's methylene-blue stain was employed primarily to give a general survey as well as to give information as to the ganglion cells. Of the thirteen cases, nine did not show any characteristic changes. Six of these were cases which had been injected with the smaller doses, and the remaining three had received 0.1 to 0.12 gramme of stovaine.

The case in which death was due to the stovaine showed marked chromatolytic changes of the ganglion cells distributed all over the central nervous system. Changes of this kind are met with in cases in which disturbances in the respiratory and circulatory system have taken place, and Spielmeyer does not consider that the stovaine was the direct cause of the degenerative process, but that it acted primarily on the respiratory function and produced these changes indirectly. The other three cases showed changes in the large polygonal cells of the anterior horns of the spinal cord. The cell bodies were swollen and rounded, and the solution of the chromatin, especially in the neighborhood of the nuclei, was advanced in proportion to the degree of swelling. In those cells in which considerable degeneration had taken place, the nucleus was found to be displaced toward the periphery and the contents of the cell appeared pale and homogeneous. In connection with cells which had become much changed, no trace of fibrillary structure could be detect-

ed, while in others degenerative changes were seen in the fibrillæ. The distribution of the changes was important. Only the large polygonal cells of the anterior horns were affected, and only a few of these were as it were picked out.

In experiments on dogs and monkeys similar chromatolytic changes in the ganglion cells were seen after injections of stovaine into the subdural space. The type of change corresponded in every way to secondary changes of the motor roots. In animals single cells or small groups of cells of the anterior horns of the spinal cord, usually limited to the sacral, lumbar, and lower dorsal regions, were affected. Clinically flaccid paraplegia of the lower extremities was seen only once in a dog, and the changes found accounted for the paralysis. This dog showed further tract degeneration affecting the posterior columns. In three monkeys extensive degeneration of the posterior roots on both sides was found, and was followed through the posterior columns high up into the dorsal regions. Spielmeyer does not consider that changes of this kind could be produced by mechanical damage of the cord or cauda. In order to exclude the mechanical action of the pressure of the injected fluid, he injected water and saline fluid into the subdural sacs of dogs, but failed to produce these histological changes. Although he has not found any tract degeneration in any of the human cases, he points out that the number of cases examined was very small, and did not justify him in making wide deductions. It is necessary to bear in mind the clinical appearance of symptoms of oculomotor paralysis.

It might be suggested that stovaine may have a special affinity for the cells of the eye movement centers, but inasmuch as Spielmeyer has found that only a few of the large numbers of cells of the anterior spinal horns were affected, it would be surprising if marked signs of paresis or paralysis had been met with, while if relatively few oculomotor nerve cells were damaged clinical signs would be more likely to be produced. As to the possibility of recovery, he points out that paralysis of the eye mus-

cle is often transitory, while the changes which he has seen appeared to be of the nature of irreparable degenerations. Here again he guards himself on account of the small number of cases examined. Whether any deductions can be made from the fact that the six cases which had received only 0.05 to 0.07 gramme of stovaine did not show any degenerative changes he leaves undecided. Against such a deduction he points out that of seven cases of the other group, in which 0.1 to 0.12 gramme of stovaine was used, only four patients showed any chromatolysis of the ganglion cells.

BACTERIAL INOCULATIONS.

In the course of an article in the *Pennsylvania Medical Journal* for September, 1908, BERGEY says that since Sir A. E. Wright published his earlier investigations on the influence of bacterial inoculations in increasing the normal protective substances of the body, and has given us a new method of estimating the influence of such inoculations, the determination of the opsonic index, we have returned again to the use of dead cultures for purposes of immunization as well as for the treatment of infections. Whether there is a definite gain in separating the active immunizing substances of bacteria from the non-essential portion remains to be demonstrated.

Wright's discovery of the opsonins and his demonstration of the effects of bacterial inoculations by means of determinations of the opsonic index have shown us that probably much of the uncertainty of the results obtained in former years was due to the use of too large doses, rather than to the effects of the non-essential portions of the bacterial cells. We are using doses to-day which are many times smaller than was the custom previous to Wright's discoveries, and in addition to this we are now in a position to interspace the doses by means of a scientific test, the determination of the opsonic index.

Wright's discoveries have also made it possible to employ bacterial inoculations as curative agents, instead of merely as preventive agents. Although the application

of bacterial inoculations is limited to particular kinds and types of infection, this measure promises to become of inestimable value to the clinician and surgeon.

Briefly stated, the bacterial inoculations are of value as therapeutic agents in those infections due to the pyogenic organisms and in tuberculosis where the disease process is more or less circumscribed or in an incipient stage. In these types of infection the flow of blood and lymph through the infected area is more or less impeded, and hence there is insufficient opportunity for the body to elaborate immune substances and thus overcome the infection. The bacterial inoculations are contraindicated in generalized infections, especially when there is fever, because in such instances the body is already overtaxed in its efforts to neutralize the poisons produced and to destroy the bacteria. In such cases the inoculations would be positively harmful.

Wright and his associates have repeatedly emphasized the importance of controlling the bacterial inoculations by careful determinations of the patient's opsonic index. The harmful effects of uncontrolled injections were repeatedly demonstrated in their experience some years ago in the treatment of tuberculosis with Koch's tuberculin. Experience has shown that it is unsafe to trust to clinical symptoms alone in judging of the effects of inoculations.

It is unfortunate that such invaluable therapeutic measures cannot be employed without the assistance of laboratory men, but until a safe criterion of the effects produced by the inoculations is discovered, other than the opsonic index, physicians should not make use of these measures unless their results are properly controlled.

For a long time bacteriologists have noted minute differences between cultures of streptococci, pneumococci, and staphylococci derived from different sources, though the general characters of the organisms conformed to the typical forms. The experience of Wright and others has been that the results obtained with autogenous cultures are usually better than those obtained with stock cultures.

Some of the manufacturers of biological products are now prepared to sell suspensions of bacteria of any desired strength. Frequent requests have been made by physicians that the writer prepare for them bacterial suspensions of various kinds to be employed in the treatment of infections. He has always refused to give to any one the bacterial suspensions requested, because his experience leads him to believe that it is unsafe to sanction the promiscuous injection of bacterial suspensions without knowing definitely the kind of bacteria causing the infection to be treated, or without having the effects of the inoculations carefully controlled by determination of the patient's opsonic index.

THERAPEUTIC NOTE ON THE ACTION OF LECITHIN IN EXOPHTHALMIC GOITRE.

BERKLEY in the *Johns Hopkins Hospital Bulletin* for September, 1908, states that during the past few years there have been occasional publications concerning the benefit derived from the administration of the salts of phosphoric acid in Graves's disease, especially the sodium salt and the glycerophosphates. Thus, Vetlesen reports a series of forty cases treated with moderate doses of sodium phosphate, all of them being benefited in varying degree.

For the past three years Berkley has used an alcoholic solution of lecithin, with very excellent results, in many cases of nervous asthenia (not psychasthenia), and much more recently has extended its service to a few cases of exophthalmic goitre with strikingly favorable effect.

Remarkably, the neurasthenics and goitre cases, despite the nauseous and disagreeable odor of the solution, cling to the remedy as an opium habitué does to that drug, and never seem to tire of it until the nervous symptoms have been allayed, and the gain in weight approaches the normal. Again, all goitre and asthenic patients who are placed on lecithin state that an hour after the medicine is taken "the nerves" are quieted, and for a time there is a cessation of the

acute symptoms, such as tremor, and thereafter a slow return—at the first—after some hours. Some of the patients compare the tranquilizing effect to that of the bromides, but assert that it is much greater.

As an experiment, Berkley placed a number of cases of asthenia for alternate weeks on lecithin and a compound preparation of the glycerophosphates of sodium, calcium, iron, and manganese, either with or without the glycerophosphate of quinine and extract of gentian, only to find that they lost weight with increase of the nervous phenomena on the glycerophosphates, and gained in weight with abatement of the nervous symptoms while on the lecithin. In each week the hyperalimentation and degree of enforced rest remained the same, so nothing could be attributed to differences in exercise or diet.

The lecithin preparation is a product which in some instances requires careful handling. When there is disturbed digestion it is out of place, and in such an event other remedies that are better suited to allay and restore to its normal condition the disordered alimentary canal must first be employed. Again, in certain cases, its action should be carefully watched, lest it induce extensive erythematous rashes, to the annoyance and discomfort of the patient. Furthermore, lecithin, *per se*, is an entire failure without the assistance and support of a milk diet. He can recall no instance of its complete success in either asthenia or Graves's disease when milk was not tolerated, and at least one liter of milk must be taken, daily, by the patient.

Berkley does not, however, rely on an entire milk diet in these cases, but allows all wheat foods, eggs, raw and cooked, all suitable green vegetables, as well as fruits, and he only cuts out meats, sweets, and special foods which are known to disagree with the patient; and every one has his own food idiosyncrasies, which must be respected. Patience, the careful notice of trivial symptoms, as well as their judicious treatment, will repay in the increased comfort of the patient.

None of the sufferers from asthenia, and

but one of the cases of Graves's disease, was subjected to the full rest treatment in bed. At first such patients are compelled to rest from 9 P.M. to 9 A.M., and the remainder of the day is spent out-of-doors, practically idling (but even this, in the case of patients in poor circumstances, is often impossible). After the gain in weight is pronounced, and the nervous symptoms show signs of abatement, they are encouraged to take up the lighter portion of their daily routine, and if they still gain, more and more of the ordinary occupations of life are gradually added, though for the time being active exercise is always restricted.

Though lecithin is probably a constituent of every cell of the body, and especially of the neurons and leucocytes, its action as a medicine is not fully understood. As an erythrocyte producer, with *pari passu* increase of the leucocytes up to 18,000 per cubic millimeter, it has no equal—iron, manganese, and phosphorus compounds falling far behind it, as is shown in instances of pernicious anemia, chlorosis, and ordinary anemia. As a rule it acts best when hemoglobin is below 70 per cent and the coagulation of the blood is slow. It is also conceivable that lecithin acts as an antithyroid hormone. When the thyroid secretion is overactive there is progressive loss of bodily weight—digestion and assimilation being assumed as normal. When the thyroid hormones are in partial or entire abeyance—the same conditions applying—there is a progressive gain in the bodily weight. That an increase in weight follows the administration of lecithin is rather singular when it is remembered that the active constituent is phosphorus, which together with iodine—the peculiar stimulant of the thyroid gland—is usually recognized as an excitor to the secretions of that gland.

Now we have apparently the reverse action, the phosphorus nullifying the activity of the thyroid hormone, or to put it more clearly, we find the phosphorus compound stopping the active nervous symptoms in the two maladies, nervous asthenia and Graves's disease, maladies that upon the surface are entirely different in their etiology.

The most plausible explanation of its powers is that it stimulates (through the agency of the leucocytes) the resistive powers of the tissues in general to greater activity; probably, also, it increases the secretions of the closed glands, such as the suprarenals and portions of the pancreas, as well as assists in erythrocyte formation and increases the phosphorus content of the leucocytes of the blood.

THE MEDICAL ASPECTS OF PYELITIS IN PREGNANCY.

In the *Quarterly Journal of Medicine* for October, 1908, WARD tells us the treatment may be (a) medical; (b) obstetrical; (c) surgical.

(a) Medical treatment is sufficient in the majority of cases. Frequently the horizontal position succeeds alone in curing the disease, probably by altering the relative position of uterus and ureter. The position is more effective if the foot of the bed is raised. The lateral decubitus has been found effective by many observers, and Sippel has shown conclusively that it does remove pressure from the ureter. In a pregnant patient with a persistent fistula after nephrotomy for encyopyelitis he found that when she was lying on the opposite side to the fistula the discharge ceased; the fistula was ultimately induced to heal in this way.

Different therapeutic values have been attached by different writers to a strict milk diet. Most physicians order it. Ziegelmann states that a milk diet is indicated because it diminishes the virulence of the organisms in the intestine. This is possible in encyopyelitis, but it is certainly not so in cases of epidemic diarrhea, in which disease the virulence of the organisms in the intestine is greatly enhanced by milk. Plenty of fluid should be given in addition to the milk. The important point is to increase the flow of urine through the kidneys, and nothing is so effective for this as distilled water.

Of drugs, purgatives are necessary without a doubt, and a number of cases seem to get well when treated merely by rest in bed and by aperients. The aperient used is not

of great importance; calomel and the sulphates are among the best. Several drugs are used because they are believed to have some specific action in curing the disease. Salol has been extensively used; methylene blue is also recommended strongly by some writers, chief of which is Marteville, who obtained very successful results from its use. Aspirin is recommended by Ruppenner. The drug that had been more successful than any other in the cases that he has seen is hexamethylenamine, or, to use the name by which it is better known, urotropin. So many times has its administration been successful, even after several other drugs had been tried, that its value seems to be proved to the hilt in cases of encyopyelitis. Unless the case be a severe one, or unless complications exist which are beyond medical treatment, the temperature will fall within three days of the first dose, and even Marteville, who strongly recommends methylene blue, says that urotropin was found successful in certain cases which did not get well under the other treatment. Five to ten grains of the drug, preferably the smaller dose, may be given three times a day in half a pint of hot water. It is often prescribed with acid sodium phosphate in order that the urine may be rendered acid. It is, however, open to doubt whether the acid sodium phosphate of commerce has much influence on the urine; an alkaline urine is made acid with urotropin alone, while acid sodium phosphate without the urotropin has not this effect. Vomiting sometimes occurs under this treatment, and if a diminution of the dose or a further dilution does not prevent this, the urotropin as originally put on the market may be tried in place of the cheaper drug, hexamethylenamine. If vomiting still continues, urotropin may be stopped and helmitol substituted for it in the same doses.

Local treatment, such as poultices and opium or belladonna fomentations, is not to be despised, as it frequently relieves pain and allows sleep.

(b) Obstetrical treatment. As far as it is possible to lay down rules in such a matter the following may be given: Induction of labor is to be advised (1) in cases of bilateral

encyopyelitis. (2) In cases of relapse where the illness breaks out for a second time in a pregnancy. (3) If it occurs again in a second pregnancy after a prolonged attack in the first, or when there have been recurrences in the interval between the pregnancies. (4) In the first attack, if the disease resists treatment by urotropin, rest and a fluid diet for more than fourteen days.

(c) Surgical treatment. The treatment may be directed to the bladder, which may be washed out, or, as Pasteau suggests, intermittently distended; or operations on the kidney may be performed, such as nephrotomy or nephrectomy. In encyopyelitis it seems clear that nephrectomy should be avoided if possible, as nephrotomy is generally successful. Moreover, if after nephrotomy the patient becomes pregnant again, she may be attacked with pyelitis in the remaining kidney, as in Lennander's case, and this is a serious matter.

LIQUOR HYDRARGYRI PERCHLORIDI (B. P.) IN THE TREATMENT OF DIARRHEA.

FAICHNIE reminds us in the *Journal of the Royal Army Medical Corps* for October, 1908, that one of the most universal diseases on service is undoubtedly diarrhea, and any drug that will cure this complaint quickly is worth bringing to notice, as, apart from the discomfort, the fact that the bowels are opened several times a day at inconvenient times and places, and possibly during the night-time, instead of once a day at a selected time, with sanitary conveniences available, must be of great weight from a sanitary point of view.

Many years ago, on first going to India, the author was recommended to use liquor hydrargyri perchloridi for an intractable case of diarrhea, and he found it most useful. During the South African war, when diarrhea was a very common complaint, he found it an exceedingly valuable medicine. It was so often successful where other drugs failed that there can be no doubt of its therapeutic value.

Liquor hydrargyri perchloridi is described

as an intestinal disinfectant, and combined with chlorodyne seems to remove the cause as well as the symptoms of diarrhea. Its use is well known, and his reason for bringing it forward now is that when in charge of two sections of a British field hospital during the late Mohmand expedition he was unable to administer it for a time, when diarrhea was prevalent, as it is not provided in the panniers. As a substitute, however, he used the following, which acted equally well, viz., one tablet of the perchloride of mercury supplied as an antiseptic, containing 8.75 grains of hydrargyri perchloridum, dissolved in 17½ ounces of water, which gave a mixture containing 1/18 grain in one fluidrachm, the same strength as the B. P. preparation. The blue color of the tablet, due to an aniline dye, is quite harmless.

ATONIC DILATATION OF THE STOMACH.

YOUNG says in the *Clinical Journal* of September 23, 1908, that the essential factors for successful treatment in atonic dilatation of the stomach are to strengthen the musculature of the viscus and promote peristalsis, and to arrest fermentation and thereby inhibit the symptoms of autointoxication.

In endeavoring to attain these objects the primary consideration must be to regulate the diet, and unless this is done we cannot hope for a satisfactory issue, despite the aid of other therapeutic measures, which, although valuable, can only be regarded as accessories. Briefly, the ideal diet is one which combines "a maximum of nourishment with a minimum of weight and bulk," and should, therefore, consist chiefly of proteid foods in an easily assimilable form, such as minced freshly cooked beef, mutton, chicken, game, fish, and the various meat and milk powders.

Starchy food, in view of its weight, bulk, and fermentability, should be reduced to a minimum, and in severe cases may occasionally be excluded altogether during the early stages of treatment. When given, it should be in the form of crisp toast, rusk,

or "baked bread" (thin slices of bread baked in the oven until golden brown), in all of which the starch is partially dextrinized.

Vegetables, for a similar reason as regards bulk and fermentability, should generally be excluded in the early stages of treatment, and when introduced should be green varieties only, and given in the form of purées.

Fats should also be but sparingly partaken of, cream or fresh butter being the most digestible forms when allowed.

In order, again, to minimize weight and bulk no fluids should be taken with meals, but from five to ten ounces of water, preferably hot, may be slowly sipped one hour before meals. Taken in this way, as Sir William Broadbent has pointed out, "it stimulates the stomach to contract and expel gas or stagnant contents." In fact, he considers, in common with Allchin and others, that in severe cases a diet restricted for a time to lean minced beef and hot water may be most beneficial. Saundby says "the digestibility of finely divided meat is not sufficiently appreciated; probably no food is tolerated so well by our stomachs, for even where the gastric chemistry is deficient such food is easily got rid of and causes no discomfort." The writer, from personal experience and from results obtained with patients, can emphatically indorse this opinion. The rationale of the method, sometimes called "the Salisbury diet," is as follows: The patient is restricted to three meals a day, with a five-hour interval between each. The diet for a few weeks is restricted to minced freshly cooked beef, varying from two to eight or ten ounces at each meal, and hot water, the latter being slowly sipped in quantities of five to ten ounces one clear hour before each meal. Ten ounces should be the limit, since the bulk of a pint, which is sometimes prescribed, is obviously injurious to a dilated stomach. As soon as evidence of undue fermentation has disappeared, a little starch food is added to the dietary, then purées of green vegetables, and as progress is made, various other articles of diet at the physician's discretion.

Summing up the advantages of the above

method it is apparent (1) that the small bulk and comminuted condition of the food imposes but a minimum of work on the stomach; (2) the hot water tends to stimulate and cleanse it; (3) the absence of carbohydrate food, by depriving abnormal fermentative organs of pabulum, tends to arrest the symptoms of autointoxication.

In milder cases small quantities of starch and fat foods may often be taken with safety from the commencement of treatment, but even in these cases the proteid element should predominate in the dietary until the dilatation has markedly decreased.

In very severe cases it is often advisable to confine patients to bed and to feed exclusively by nutrient enemata for some days, so giving the stomach a complete rest. Even when food by the mouth is resumed, it is well, until the patient is able to take a fair amount of nourishment, to continue enemata, remembering also to give enemata of water up to pints a day, since in such a case the patient cannot with safety take enough fluid by the mouth to suffice for his physiological needs.

THE INFLUENCE OF THE SUPRARENAL GLANDS ON THE BONY SKELETON IN RELATION TO OSTEOMALACIA AND RICKETS.

In the *British Medical Journal* of September 19, 1908, Bossi, apropos of the discussion upon Cæsarian section and other surgical methods of enlarging the pelvis, laid before his English colleagues a method of treatment which he asserts may render Cæsarian section unnecessary in cases of osteomalacia in pregnant women. Though many methods of drug treatment have been proposed for osteomalacia, not one up to the present has proved satisfactory. If his successful results continue, he believes he has discovered a method which will completely abolish the Cæsarian operation for osteomalacia and will reveal an important physiopathological truth, to wit: that the suprarenal glands exercise an important influence upon the ossification of the skeleton. He says that he takes pleasure in placing before the profession the brilliant results

obtained with extract of the suprarenal glands, more especially with the adrenalin prepared by Messrs. Parke, Davis & Co., in the first patient upon whom the author tried it.

A woman in the seventh month of her seventh pregnancy, in an extreme degree of osteomalacia, was admitted to his clinic in November, 1906. The disease had commenced in the early months of her fifth pregnancy with the usual symptoms—pains, difficulty in walking, anemia, osteomalacic cachexia, and insomnia. In the month of August she had become quite unable to get about at all, became completely bedridden, and could not even move on account of the pains and her extreme debility. When admitted to the clinic in November her condition was most deplorable; the symptoms became worse and worse, her abdomen became more and more distended as the pelvis continued to contract, and day and night she shrieked aloud under the torture of her horrible pains. He had almost decided to perform Cæsarian section before the term of her pregnancy on account of her pitiable condition, but on December 16, 1906, after experiments which demonstrated relations between the suprarenal glands and the ovaries, and after considering the ischemic effect of adrenalin (Takamine), the author commenced treating her with doses of 0.5 cubic centimeter of the 1-in-1000 solution prepared by Parke, Davis & Co. Immediately after the first injections the pains began to disappear and the insomnia was relieved, and after the injections had been continued for a few days the patient's condition was marvelously changed. She was able not only to get out of bed and walk with hardly any pain, but her abdomen, instead of growing larger, became less distended because the pelvis dilated, and at the term of her pregnancy she was spontaneously delivered. She again became pregnant without any symptoms of osteomalacia, and July 19, 1908, had another spontaneous accouchement.

Apart from this case, the writer himself and other physicians have had others most happily treated by the same method. There

have also been failures, but it should be known that he has always stated that for success by this method one cannot count on any cases except those of acute classical osteomalacia, or such as have become acute owing to the pregnancy.

In regard to the dosage, he affirms that women with acute osteomalacia can, without any danger, support two injections a day of 0.5 cubic centimeter, or even of 2 cubic centimeters, of Parke, Davis & Co.'s solution of adrenalin. After some days, however, there are symptoms of intolerance, but after an intermission of four or five days the treatment may be resumed with the same doses.

He thinks we have not only discovered a new method of treating osteomalacia, but also evidence that (1) insufficiency in the function of the suprarenal glands must be the cause, or a factor in the causation, of osteomalacia; (2) the suprarenal glands exercise an important influence upon the ossification of the skeleton—a fact previously unknown, but which he considers he has proved by radiographs on human patients and on sheep. In sheep from which he removed one suprarenal gland he induced an experimental osteoporosis.

It need hardly be pointed out that if these results are confirmed the method will find useful application in the cure of rachitis in children, as one will be able to accelerate the ossification of the skeleton in rickety subjects by the administration of adrenalin.

REMARKS ON THE USE AND MISUSE OF IRON REMEDIES.

EUSTACE SMITH in the *British Medical Journal* of October 17, 1908, asserts that in ordering a chalybeate the choice of the preparation can never be a matter of indifference, for besides the fact that patients vary greatly in their ability to tolerate these remedies, a stomach rendered irritable by recent derangement is often found to bear ill a form of iron which at another time it could dispose of without difficulty. Under ordinary conditions of debility, unless the tongue is quite clean, it is best to begin with

the ammonio-citrate of iron in an infusion of calumba, changing when the tongue is clean to one of the stronger preparations. In the treatment of anemia in the child, after the state of digestion has been attended to (an indispensable preliminary) the ammonio-citrate is also useful. It is especially to be preferred in cases of lingering gastric catarrh after alkalies have ceased to do good and the stomach is as yet unable to profit by an acid tonic. In fact, this salt and the tartrate are the only preparations of iron which can be given in such a condition with any prospect of benefiting the patient. Two or three grains may be prescribed with five of potassium citrate, and a few drops of sal volatile in a spoonful of infusion of calumba. It should be sweetened with glycerin, never with syrup. The ammonio-citrate makes a perfectly clear solution with sodium salicylate. It therefore forms a useful addition to the prescription in cases of subacute rheumatism in the child, when the articular pains are slow to subside, or recur again and again when the salicylate is discontinued. Rickets and splenic anemia show improvement most quickly with the acid preparations, especially the perchloride or sulphate of iron. These forms should also be chosen when this remedy is required in cases of hemorrhagic purpura.

To strumous children who suffer from tuberculous disease of bone, or chronic enlargement of glands, the iodide of iron has long been held to be especially suited; but the author asserts that in his experience incomparably the best preparation for these cases is a mixture of the tincture of the perchloride of iron (5 to 10 drops) with the pharmacopœial solution of the perchloride of mercury (10 to 20 drops), taken perseveringly three times a day for a period of months. Cases of "mucous disease" do not benefit, as a rule, by the stronger preparations. For them the best form is the tartrate or the ammonio-citrate given with an alkali in a bitter infusion. In cold weather one or two drachms of the decoction of aloes may be substituted for the alkali with advantage, but this becomes

irritating in summer and should be omitted. Dialyzed iron is a favorite remedy with some practitioners, and as a rule is unirritating to the stomach. Still, even an un-irritating preparation of iron, although it may set up no obvious disturbance, is not likely to be a source of benefit to the patient as long as the digestive processes continue to be in an unsatisfactory state.

The strong preparations of iron are best taken after a meal. The tartrate and ammonio-citrate, especially when given with an alkali, have always seemed to act best when taken about an hour before food. The medium in which the dose of iron is prescribed is not a matter to be neglected. The bitter infusions—and of them the infusion of calumba is to be preferred—are usually ordered, and not only agree well but no doubt add to the value of the remedy. It is important, however, to insist that the infusion be freshly made, for the concentrated infusions, diluted with water to the required strength, which are often made to do duty for the fresh preparations, are not desirable additions to the mixture. Moreover, they are frequently stale, and on that account not unlikely to upset the stomach. If this happens the blame is at once referred to the metallic salt, and the patient is said to be “unable to digest iron.” In every case of such assumed incapacity it is well to dispense with the bitter, and order the perchloride drops to be taken well diluted with one of the aerated waters. The kind of water to be used is immaterial, for it is the gaseous constituent of the medium which gives its value to this method of administration. The aerated fluid not only renders the draught more agreeable to the patient and less unwelcome to the stomach, but seems to invest it with the qualities of a natural ferruginous water so as very appreciably to enhance the efficacy of the remedy. In using this or any of the stronger preparations of iron it is important to insist upon thorough dilution. For an adult the dose should be taken in a full claret glass of soda or Seltzer water three times a day immediately after food.

In addition to their tonic influence upon

the system generally, certain of the chalybeate salts have special uses in their action upon particular organs. Thus the pernitate in small doses (one to two minims of the solution) is of value as a safe and efficient remedy for children in cases of convalescence from prolonged chronic diarrhea. This ferric nitrate, indeed, seems to have a special invigorating effect upon all the mucous membranes, giving tone to relaxed tissue and reducing secretion. It has been used successfully for this purpose in cases of chronic bronchitis, menorrhagia, and leucorrhea. For an adult the dose is 10 to 15 minims. It must be well diluted, preferably with one of the aerated waters.

PREVENTION OF THE FATAL INTOXICATION THAT SOMETIMES FOLLOWS SEROTHERAPY.

This important subject is discussed editorially in the *Journal of the American Medical Association* of October 3, 1908.

In practical medicine the most important feature of the anaphylaxis or hypersensitization reaction concerns its relation to the cases of sudden death which have occasionally followed the use of serum for therapeutic purposes. It is highly probable, in view of the identity of the symptomatology of the reaction in guinea-pigs and the symptoms as described in the cases of serum intoxication in man, that the latter are the results of intoxication with a foreign protein in persons who have been sensitized to this protein, often in some unknown way. This fact, however, has raised two important questions: one being why fatal or serious accidents have so seldom occurred in view of the frequency with which two separate injections are given to one individual at a considerable interval; the other, whether the fact that a person has had a dose of horse serum for therapeutic purposes renders it unsafe to administer another dose at some later time. The answer to both of these questions probably lies in the difference in the effects of doses of serum by different routes; and as this explanation seems not to have been advanced in the clinical literature, so far as we have

observed, it may be advisable to mention it here.

In order that the second or intoxicating dose of serum may produce its lethal effects it must enter the circulating blood and be present in the blood in something more than an infinitesimal amount. Presumably it is in the central nervous system that the foreign protein produces its effects, and it must reach this tissue by the blood (or by direct injection) in not too extreme a dilution. Consequently, it is found that a much smaller dose of protein will kill sensitized animals if injected directly into the blood than if injected into the peritoneum, and the symptoms appear much sooner, for absorption from the peritoneum is slow, and the amount of foreign protein in the blood at any one time is necessarily small. Lewis states that 0.01 cubic centimeter of serum is a certainly fatal dose by the intracardiac route, and 1/150 cubic centimeter will sometimes kill. By the intraperitoneal route 3 cubic centimeters is almost certainly fatal, he says, although others have found much smaller doses fatal sometimes by this route. By the subcutaneous route Lewis says "it is probably impossible to reach the certainly fatal dose because of the impossibility of getting rapid absorption. As 5 or 6 cubic centimeters always develops a well-marked reaction, it is probable that from 15 to 20 cubic centimeters, if absorbed at about the same rate, would certainly be fatal." The experience of other experimental workers has been similar to this.

If we consider, therefore, that 5 or 6 cubic centimeters of serum subcutaneously will not kill a 300-gramme guinea-pig that has been carefully sensitized, it is quite evident why a similar dose does not produce noticeable effects in a man weighing 60,000 or 70,000 grammes, or even in a child of 10,000 grammes or more. On the other hand, if the second injection should be made into a vein, by accident, the fatal dose would be almost certainly obtained, for by the intravascular route 1 cubic centimeter would be a fatal dose for an adult. It would seem very probable, therefore, that the few cases of fatal intoxication with foreign serum

represent the occasional instances in which the serum has been injected directly into a vein in a person who has been previously sensitized, thus explaining the fortunate infrequency of these catastrophes. Any one who has seen the violent local reaction which sometimes follows a second injection of antitoxin can easily appreciate how probable a fatal outcome would be if the injection had entered the blood.

If this is the correct explanation of the serious results that sometimes follow injection of serum for therapeutic effects, it should be easy to avoid danger from a second injection and thus make repeated use of serum when necessary a safe procedure. Injections should be made in all cases with a glass-barreled syringe, and by gentle aspiration before injection the presence of the point of the needle in a vein would be indicated by entrance of blood into the syringe. If one had reason to fear sensitization, knowing that the patient had been previously injected with serum, it would undoubtedly be well to give but a small fraction of the serum, say 0.5 cubic centimeter at the first, waiting a few hours before the second, for it is known that sensitized animals receiving less than a fatal dose at the second injection are then refractory to large doses given a few hours or days later. This latter precaution, of injecting a small preliminary dose to sensitized patients, has already been advocated and used by V. C. Vaughan, Jr., and possibly by others.

SCOPOLAMINE-MORPHINE AND CHLOROFORM ANESTHESIA.

MACNAUGHTON-JONES in the *Clinical Journal* of September 23, 1908, tells us that for some years, since reading the experiments of Professor Schäfer and Mr. Scharlieb, he has given an injection of strychnine, one-sixtieth to one-thirty-sixth of a grain, and atropine, one-hundredth of a grain, an hour before operation in all cases of chloroform anesthesia for any serious operation. The physiological effect on the pulse fully bears out the conclusions they arrived at as to the influence on the blood-pressure. In the great majority of the cases

the author has administered the night before operation one-sixth to one-eighth of a grain of morphine and one-hundredth of scopolamine. The following morning (operating at 9.30 A.M.), when the bowel has been finally and thoroughly emptied, a second injection of the same quantity is administered, and from half to one hour before operation the strychnine and atropine is given. In every instance save one the chloroform was administered with a Vernon Harcourt regulator. In some of the lighter cases a morning injection only had been given, and in some strychnine alone without the atropine beforehand.

The author has never resorted to spinal analgesia, as he is quite satisfied with the general method. When in Heidelberg and Freiburg in 1906, he was surprised to find that every gynecological operation was performed under spinal anesthesia, and with complete success—in the latter clinic with the additional use of scopolamine and morphine.

In his own operations the patient is brought into the theater in a quiet and tranquil state, sometimes slightly narcotized; she quickly goes under the chloroform, and remains in a most satisfactory condition during operation. The postoperative results as regards immediate pain, sickness, and general discomfort are, as a rule, better. With regard to sickness there are exceptions, and in these latter the vomiting is not influenced. There are no disagreeable postoperative effects. Only in one case, that of an abnormally obese woman with weak heart action, in which the abdominal incision went through nearly three inches of fat, had the chloroform to be discontinued for a time. This operation, which was a most severe one, owing to serious bowel complications, was completed in two hours, and there were practically no after consequences.

The amount of chloroform, whether judged in percentage or in bulk, required for even severe operations is very small. If more than the minimal percentage or amount is given, the profound and, the author thinks, dangerous degree of narcosis

supervenes. He habitually uses oxygen, and it is very valuable in the sequence he is discussing. In nervous, excitable women the antecedent injection of scopolamine and morphine is most useful. It has the effect of inducing a calm, happy, and hopeful state, and they inhale the general anesthesia more easily and readily. The dose of morphine is important and should be varied according to the general state and physique of the patient. As to after-effects, they are, the writer thinks, less severe. The dangers are those familiar to surgeons who have employed morphine and chloroform. To avoid them the utmost care is necessary to limit the amount of chloroform used, and as very little is really needed this is readily done, especially with a regulating inhaler. The patient should not be pushed to the depths of chloroform narcosis essential when that anesthetic is used alone, as the danger arises from paralysis of the respiratory center. Fortunately, the gradually deepening narcosis and lessening depth of respiration, with the dusiness of color that appears, give timely warning of any peril. Mr. Herbert Scharlieb says that it is impossible to argue from a few cases, but judging from those the author has seen he would say that patients under the influence of scopolamine and morphine need less chloroform to anesthetize them than those who have not had a prior injection of these drugs. He has never seen any ill effects in patients to whom scopolamine and morphine have been given, and does not think that the modification of the usual conditions of the pupil during anesthesia matters in the least. Mr. Bakewell says: "I have only given chloroform by the scopolamine and morphine method of Dr. MacNaughton-Jones. Most of the cases have been celiotomies, and in some instances as severe operative procedures as can well be imagined. There has been a curtailment of the initial stages of the anesthesia, and the total quantity of the chloroform administered has been smaller. There was less excitement during the induction period. I have never seen any alarming symptoms arise during administration by this method."

HOW ARE THE INDIVIDUAL PHENOMENA OF MORPHINE CRAVING TO BE COMBATED?

In the *British Medical Journal* of September 12, 1908, GAMGEE very briefly refers to the methods of treatment which in his experience have proved most useful in controlling the chief distressing symptoms complained of by persons recovering from chronic morphinism.

If transient mental symptoms, particularly a fear of suicidal tendencies, appear, it proves that the withdrawal of morphine has proceeded at too rapid a rate, and it may be advisable to administer a dose of about one-sixth of a grain of a salt of morphine by the mouth. In all probability this dose will suffice to tranquilize the patient and may probably not require to be repeated. For the distressing restlessness and "fidgets in the legs," which are among the most distressing of all the phenomena of morphine craving, no means of treatment equals the use of very warm baths, in which the patient should be kept for an hour or two. These should be given at night, the time when this distressing restlessness is apt to come on. Not only do they check the fidgets, but they greatly predispose the patient to fall asleep. To combat the insomnia doses of veronal not exceeding 0.5 gramme may be given at bedtime. It is, however, the nervous, the cardiac, and the gastric symptoms which tend to keep the patient awake, and unless these are relieved such a drug as veronal has no great chance of acting satisfactorily.

In cases characterized by cardiac uneasiness, some gasping for breath, and orthopnea, the patient may be allowed to sit in a chair for some time. The author has found that a full dose of tincture of digitalis, repeated hypodermic injections of strychnine (one-thirtieth of a grain), and cupping-glasses to the region of the heart have given most relief. The presence of this group of symptoms indicates, however, that the withdrawal of morphine has been carried on at a too rapid rate. In a properly regulated "Entziehungskur" these symptoms do not occur.

It is the symptoms of gastric catarrh which are most prominent, most distressing, and which require the most active treatment. They may occur in persons who are normally free from all gastrointestinal troubles. Attention should be paid to diet; no alcoholic beverage should be allowed. In his experience, however, these cases of gastric catarrh following morphinism yield wonderfully to washing out the stomach, preferably with Vichy water. Very large doses of bismuth carbonate (as much as five grammes) may be administered the first thing in the morning, and the patient should be directed to lie first in the prone, then in the supine position, then on each side—exactly, indeed, as is now often done in cases of gastric ulcer. If the diarrhea proves obstinate and is not sensibly modified by repeated small doses of castor oil given in capsules, recourse may be had to fairly large doses of decoctum hæmatoxyli. It is best, however, to keep the bowels fairly open.

In cases of morphinism complicated with the cocaine habit it not infrequently happens that the morphine appears to minimize the poisonous effects of the cocaine, so that the worst cases of cocaine poisoning, which are characterized by grave and chronic mental symptoms, do not apparently occur in the case of persons who take morphine and cocaine conjointly. In the class of cases under discussion the patient should be confined to bed, and whilst the cocaine is suppressed either suddenly, or very nearly so, no attempt should be made to interfere with the morphine until the patient has been some days without cocaine. As a rule, however, no ill effects are noticed on suppressing the cocaine suddenly, the most marked effect observed being the state of drowsiness and general weakness which supervenes. Usually with the withdrawal of the cocaine the auditory and visual delusions, which may have been very prominent, disappear with great rapidity. The morphine is then gradually withdrawn.

The author asserts that obviously (though not necessarily) the chances of a permanent cure are not great unless the patient is in-

tensely anxious to be cured; unless, therefore, he is oppressed by the nature of the habit to which he has become addicted and is convinced of the moral and material ruin which it may bring, not only upon himself but on those who are nearest and dearest to him, there is little hope. Except in rare cases, a cure of a case of chronic morphinism should extend over a period of from six to ten weeks, during which time the patient should be the voluntary inmate of a home or institution presided over by a physician who is intimately acquainted with the natural history of chronic morphinism and its treatment by the process of the gradual withdrawal of the drug. In this institution there should be no means by which the patient can procure for himself either morphine or hypodermic syringes. Every means should be taken to ascertain from the patient the total quantity of morphine which he has been in the habit of introducing into his system in twenty-four hours. On commencing the treatment the patient should be kept in bed. The use of the syringe should in all cases in which enormous doses of morphine have been taken hypodermically, or in which heart symptoms are urgent, be absolutely discarded from the very first hour of commencing the treatment. As soon as symptoms of morphine hunger assert themselves unmistakably, a dose of morphine is administered by the mouth, which will still the symptoms, enable the patient to take food, and to rest quietly. It may be that in six or eight or twelve hours' time other small doses of morphine are needed to still the painful symptoms of morphine craving.

The total quantity of morphine which has been administered during the twenty-four hours is accurately determined. It is certain to be much smaller than that which the patient had been taking hypodermically, and the abolition of the use of the syringe in itself constitutes a great and an immediate victory. Day by day the quantity of morphine in the small draughts which have been prepared for the use of each particular patient is, if possible, reduced, though it is a mistake to attempt to advance too fast. The

object is to diminish the dose very gradually, and without interfering with either the nutrition of the patient or his sleep. Following this method the time comes when the draughts contain no more morphine, and then there usually occur one or two days when the patient is somewhat uneasy, but without experiencing any real suffering. At this stage such hypnotics as veronal may be needed for a few nights. In cases in which a sufficient time is occupied in gradually diminishing the quantity of morphine administered all symptoms may be absent. There are cases, however, in which patients of a resolute disposition may desire, at the cost of some amount of suffering, though absolutely insignificant in comparison with that involved in the sudden and complete withdrawal of morphine, to abridge the cure—*i.e.*, to submit themselves to a treatment in which the process of diminishing the dose of morphine daily administered goes on much more rapidly.

THE TREATMENT OF ECZEMA.

In the *Boston Medical and Surgical Journal* of September 3, 1908, SUTTON says that in discussing the topical treatment of this disease it is essential that we divide it into types, and the simpler the classification the better. The terms "acute," "subacute," and "chronic," with reference to the stage and not the duration of the affection, while not as clear-cut and definitive as could be desired, serve fairly well.

From a histopathologic standpoint there are three morbid conditions present in all forms of the disease. These consist of a parakeratosis (which is really an irregular, excessive cornification), an acanthosis (a proliferation of the prickle cells, with consequent increase in thickness of the epithelial layer), and an excess of moisture, with resulting separation of the cells (which Unna characterizes as a "spongy metamorphosis").

In the first stage of the disease, when the condition is identical with a simple dermatitis and all of the changes incident to an acute inflammatory process are present in

the upper part of the corium, the excess of moisture, in the form of serum, gives rise to edema. If the process continues, acanthosis results from hyperproliferation of the rete, and finally, as a result of this rapid formation of cells, we get a parakeratosis, although the outer layers are immature and imperfectly cornified.

In the acute and the early exudative stages of the subacute forms, when the skin is hot, tense, and shiny, with serum oozing out on the surface, and occasional thin-walled vesicles scattered about, a soothing astringent is indicated, and one of the most satisfactory is an alum lead acetate mixture:

Alum, 20.0;
Lead acetate, 35.0;
Water, 400.0.

Mix and filter. Apply this solution to the skin by means of soft gauze compresses, not too tightly bandaged.

At the end of twenty-four hours the surface will be bleached and wrinkled, and there will be marked lessening of the edema and little or no elevation of temperature.

In many instances, and especially if, an hour or so after the astringent has been discontinued, the skin appears more damp and soggy than it should, the free use of a bland, inert, impalpable powder (such as one consisting of equal parts of zinc oxide and zinc stearate) will complete a cure.

The powder protects the surface, promotes evaporation (by increasing the evaporating area), and acts as an absorbent.

Should the affected area feel dry and exhibit a tendency to exfoliation, with more or less pruritus, fats are indicated, and nothing is of greater value than carbolized zinc oil:

Phenol, 5.0;
Zinc oxide, 60.0;
Olive oil, 40.0.

Mix thoroughly. Apply by means of soft cotton cloths, two or more times daily.

Should the case, when first seen, present a dry, subacute inflammatory condition, the skin being red, infiltrated, and covered with irregular, ill-defined scales, while itching is intense and continuous, a lotion containing liquor carbonis detergens should be alternated with the zinc oil:

Liquor carbonis detergens, 15.0 to 30.0;
Zinc oxide, 20.0;
Starch, 20.0;
Glycerin, 25.0;
Water, sufficient to make 100.0.

Mix. Shake well and apply by means of a cotton swab several times daily.

Although the proportion of the active ingredients in this prescription appears to be excessive, from a theoretical point of view, in actual practice the results are excellent.

The lotion can be used at intervals through the day, and the zinc oil, plain or carbolized, applied at night.

In the thick, hyperkeratotic, chronic form of the disease, which is most frequently seen on the palms and the anterior surfaces of the wrists, an agent which will loosen and dissolve the outer layers of superfluous epithelium without giving rise to additional inflammatory changes in the corium is needed, and none is better than salicylic acid:

Salicylic acid, 2.0 to 5.0;
Wool-fat, 20.0;
Vaselin, 25.0.

TETANUS TREATED BY INTRASPINAL INJECTIONS OF MAGNESIUM SULPHATE.

POWERS (*Medical Record*, July 25, 1908) records the case of a negro seen ten days after a pistol wound of the thigh, and at that time having a convulsion every minute, with the belly muscles rigid, also those of the thigh, back, neck, and the jaws. Pulse 120 to the minute; the patient's respiration quickened when he was not in convulsion. The patient was chloroformed, and a needle was introduced beneath the third lumbar spine, drawing about 2 cubic centimeters of spinal fluid. Thereafter 2 cubic centimeters of magnesium sulphate solution, about 25 per cent, was injected. The patient was given chloral, bromide, and morphine. Three days later 10 cubic centimeters of tetanus antitoxin was injected into the thigh muscles along the supposed course of the bullet. At this time the patient was considerably worse as regards pulse and respiration, although the convulsions were not so severe as when first seen. The next day another spinal injection of magnesium

sulphate was given in slightly larger dose, and three hours after this the patient was absolutely relaxed, and complained of a "splitting headache." Sixteen days after the patient was first observed he was able to walk about.

ARTIFICIAL SYNOVIAL FLUID.

MORRIS (*American Journal of Surgery*, June, 1908) notes that after injuries there very commonly follows a synovitis which subsides, leaving a plastic exudate which forms adhesions within the joint. These adhesions, instead of undergoing absorption, gradually contract with a limited range of motion and cause pain and tenderness on attempts at motion. In many of these cases excellent results follow simple breaking up of the adhesions, the patient being anesthetized. He is kept in bed a few days until the acute inflammation subsides, and then passive motion and massage bring about a cure. There are other cases in which there is so much roughening of the cartilaginous surface of the joint by adhesions that movements of the joint excite new synovitis. In still other cases the adhesions have engaged so large a part of the synovial structures that only a small secreting surface is left.

A class of cases which closely simulates the joint adhesions includes the group of so-called "dry joints." These "dry joints" are commonly ascribed to rheumatism, and some of them actually do depend upon the changes following rheumatic inflammation of the joint. Some follow gonorrheal synovitis.

Morris has injected into the synovial cavities of such dry joints a lubricant consisting of one part of boroglyceride, three parts of glycerin, and four parts of watery saline solution.

In the first case in which he used it there were joint adhesions following a gonorrheal synovitis. The adhesions had been broken up a short time previously, but there was so much pain and tenderness remaining that the result was not satisfactory. After injection of the artificial synovial fluid the patient was immediately relieved from pain and

tenderness and continued to have a good joint when seen some months later.

The next case was that of an elderly woman who had one of the dry, creaking shoulder-joints of unknown origin, with adhesions, and without a definite rheumatic history. The injection of the synovial fluid in this case gave prompt relief.

Satisfactory result followed the injection of cured tuberculous joints with adhesions. The best results obtained were in cases of adhesions in the joints following simple rheumatic synovitis. In only one case has there been failure to relieve. For the hip-joint Morris injects about an ounce. The patient is kept in bed quietly for a number of days.

TREATMENT OF INFLAMMATION OF THE GLANDS OF BARTHOLIN BY BIER'S HYPEREMIA METHOD.

PLASS (*Berl. klin. Woch.*, April 20, 1908) says that, in general, conservative treatment of inflammation of the glands of Bartholin has been unsuccessful. Such inflammation is generally of gonorrheal origin and ends in abscess of the gland, followed by infiltration of the surrounding tissues. The author has had made a modification of the vacuum glass of Bier, with the entering tube prolonged within the glass, so that the rubber tube and ball cannot be infected with the discharge. He has treated successfully with this apparatus twenty-one cases in fourteen patients. The labium majus is held by an assistant and the glass put in place one to one and a half centimeters in front of the posterior commissure, so that the outlet of the inflamed gland lies in the middle of the opening of the glass. Too great suction with the ball is to be deprecated, since the tissues are drawn deeply into the opening and resorption and circulation are thus prevented. The apparatus is applied for thirty minutes, in two sittings, each day with the patient in bed. The pain soon passes away, secretion becomes normal, infiltration disappears, and healing results.—*American Journal of Obstetrics and Diseases of Women and Children*, June, 1908.

THE OPERATIVE TREATMENT OF RECENT FRACTURES OF THE FEMORAL SHAFT.

HUNTINGTON (*Annals of Surgery*, September, 1908) is satisfied with results so often obtained with fracture of the femoral shaft. He doubts the advisability of operating when the bones can be put in position by simple means. His method of procedure in appropriate cases is as follows:

A skein of heavy woolen yarn is passed over each leg to serve as a medium for perineal traction. To each of these is attached a cord whose distal ends are tied to a ring in the end wall of the room. Another similar skein is applied to the ankle of the affected limb with a clove-hitch. To this is attached a small set of pulleys, which, in turn, are anchored to the wall at the foot of the operating table, and the pulley rope is entrusted to an assistant.

Under the most careful aseptic precautions a comparatively small incision will suffice to uncover one or both ends of fragments. At this point the value of the traction apparatus is clearly apparent. The fracture being a recent one, no elaborate dissection is requisite. Having identified the line of fracture, traction by the pulley exerted upon the overlapping bones serves to bring the lower fragment slowly downward until it is capable, by external pressure upon both fragments; of being placed in exact axial relation. If the fracture be transverse or nearly so, slight relaxation of tension will serve to interlock the fragments. The operation now becomes delightfully simple. With the fragments interlocked, rotation being avoided, a drill hole is sunk in each fragment from one-half to three-fourths of an inch from the fracture line, the interval being determined by the length of the staple to be introduced. The placing of the staple is materially aided by the use of an ordinary carpenter's nail set, each limb of the staple being gently driven into the corresponding drill hole. We now have the fragments firmly united in exact anatomical relation by an unyielding steel splint. If the fracture be oblique or spiral the traction principle is alike applicable. Exact reposition being

thus obtained, maintenance of proper relations is secured. In these cases the staple may or may not be found available. If the conditions are such as to throw doubt upon the efficiency of one or more staples applied at each end of the fracture line, a single steel screw of the proper length and caliber may be used as a substitute. By it the permanency of adjustment may be absolutely assured.

Closure of the wound merits a passing word. A continuous catgut suture should be applied from the deepest layer of soft tissues outward so as effectually to obliterate the dead space overlying the fracture line and staple.

Drainage, in cases in which there is extensive oozing, is probably a safeguard, but in the average case Huntington believes it is to be omitted on the ground that it affords an avenue of ingress for infection.

The wound having been carefully protected by a gauze dressing and before pulley traction is wholly released, a plaster-of-Paris spica is applied from the lower leg to the waist line.

To avoid slight curvature at point of fracture, as has occurred in several instances, it is best to employ permanent traction apparatus for a period of a week or ten days succeeding operation.

Huntington states that the term "satisfactory result" is too elastic and does not conform to any standard.

The two-plane radiogram, when available, affords the most reliable diagnosis, and determines the plan of treatment.

The possibility of infection is not a prohibitive menace.

Operative wounds are less susceptible to infection in initiative than in late corrective procedures.

Approximate anatomical reposition is essential to quick repair and ideal result.

In oblique fractures slight overriding is permissible.

In transverse fractures appreciable shortening is due to overlapping of fragments, and is incompatible with good surgery.

Mechanical traction during operation is indispensable.

Steel staples (or screws in oblique fractures), because of ease of adjustment and efficiency, have proven superior to other methods of fixation.

PYLORIC STENOSIS IN INFANCY.

MORAN (*American Journal of Obstetrics and Diseases of Women and Children*, June, 1908) thus concludes an article on this subject:

Pyloric stenosis in infancy is due to the following conditions, either of which may exist alone, but they are frequently associated: (a) Hyperplasia of the tissues of the pylorus, particularly of the muscular coat; (b) simple spasm of the pylorus.

The evidence would seem to indicate that the hyperplasia is congenital, and that the pyloric spasm originates after birth.

Cases in which the symptom-complex does not develop until some time after birth are probably instances of partial stenosis with secondary spasm, or pyloric spasm alone.

The pyloric spasm may be due to a neuritis, erosion of the mucous membrane of the stomach or pylorus, or acute or subacute gastritis.

Since it is tenable that either hyperplastic or spastic stenosis may be present alone, or that the two may coexist, both medical and surgical treatment are of value, but the sphere of each must be determined by the exigencies of the individual case.

VOLKMANN'S ISCHEMIC PARALYSIS.

ALFRED S. TAYLOR (*Annals of Surgery*, September, 1908) notes that in the last four years more cases have been reported than in the preceding twenty-four years, which is rather an index of the increasing interest in the subject than of the greater frequency of the lesion. In all but two of the 59 cases the forearm was involved. The other two cases occurred in the flexors of the leg and foot. The great majority of cases occur in children from three to twelve years old. Their vessels are less mature and the circulation of their muscles is more easily dis-

turbed. The underlying cause in all cases is ischemia, which may be induced by direct compression of the vessels and muscles or by contusion, laceration, or thrombosis of the vessels. At least 80 per cent of the cases reported have followed fractures where splints or plaster bandages have been too firmly applied. The fractures involved the arm and forearm in about equal numbers; always the lower third of the humerus in the arm, and usually the middle of the bones in the forearm. Complete ischemia, persisting for more than six hours, is almost sure to be followed by serious contracture. The condition is essentially a myositis resulting from prolonged absence from the muscle of oxygenated blood. Muscle substance is replaced by fibrous tissue in proportion to the severity of the case, with a corresponding degree and rigidity of contracture.

The nerves are frequently involved, either primarily from the ischemia and pressure, or secondarily from compression by the cicatricial mass. This form of paralysis occurs nearly always in the forearm after too tight dressings have been applied to fractures near the elbow. The great majority of cases occur in children from three to twelve years old.

There is early onset of severe pain and swelling; simultaneous appearance of rigid contracture with the paralysis of the muscles, causing the characteristic "claw-hand." The simultaneous appearance of the contracture with the paralysis differentiates these cases from palsies due purely to nerve lesions.

Severe cases may result from six hours of tight compression.

Evidence of damage to nerves should always be sought.

Prophylaxis is most important. No tight dressings should be used on any fractures, especially when they are near the elbow-joint in children. In all dressings allowance must be made for traumatic reactionary swelling. Frequent inspections of dressings must be made for the first two days after injury.

When the lesion occurs dressings must

be removed, the fracture neglected for the time being, and attention paid solely to the return of muscle nutrition and function.

Non-operative treatment consists in the use of massage, electricity, vigorous passive motion, etc. (so-called physical therapeutics).

Lengthening of the tendons of the shortened muscles sufficiently to permit simultaneous extension of the wrist and fingers.

Resection of both bones of the forearm is a simpler and probably a better operation. Enough is removed to permit full extension of the wrist and fingers.

Either operation relieves the excessive tension and favors muscle regeneration.

In all cases damaged nerves should be properly cared for.

After-treatment consists of physical therapeutics and must be vigorously and systematically applied.

Prognosis is on the whole unfavorable; complete cure is rare; improvement often comes only after months or years of steady work.

Results are better the earlier and more vigorous the treatment.

PERINEORRHAPHY FOR COMPLETE LACERATIONS.

WATKINS (*Surgery, Gynecology, and Obstetrics*, July, 1908) thus describes his technique:

A transverse vaginal incision one-half to one inch long is made. The incision extends through the vaginal mucosa and should be at least half an inch beyond the uppermost part of the rectal tear. The distance between the rectal tear and the incision will vary in individual cases. The higher up the incision the greater the security against infection. When there is not much injury to the rectal wall the incision may be made at least one inch above the rectal opening.

A sharp-pointed straight scissors is pushed under the vaginal mucosa from the incision down to the retracted end of the sphincter ani muscle on one side, and the blades are opened so as to freely separate the tissues, care being taken not to tear

into the rectum. The end of the retracted muscle is easily detected by the depression described by Emmet. Blunt dissection with the scissors is done in like manner on the other side.

The connective tissue, between the two canals made by the scissors, is separated by blunt dissection or by incision down to the rectal wall, care being taken not to injure the rectum. When this tissue is separated, the finger inserted into the wound will show the absence of any connective tissue bands. If any bands of tissue are felt, they should be snipped with scissors. It is important to separate this tissue thoroughly, as the amount of tissue left at the bottom of the wound, over the rectal mucosa, will determine the amount of traction upon the sutures that unite the torn ends of the sphincter ani muscle. The ultimate result will depend much upon the amount of tension on these sutures. When this tissue is thoroughly separated one can readily appreciate that the amount of tension upon the sutures that unite the sphincter ani muscle will be slight, as they have to be drawn over the rectal mucosa only.

The end of the muscle is now caught on either side with a Pean or rat-tooth tissue forceps and drawn into view. The muscle is more readily brought into view when the blunt dissection is carried well down into the muscle. One should be careful to bring up most if not all of the muscle. The first grasp of the forceps will frequently not bring up enough. More can be brought into view by exerting slight traction upon the forceps, while a second, or if need be, a third, forceps catches a deeper part of the muscle.

The two ends of the muscle are sutured with No. 1 chromicized catgut. The suture should be carried through the muscles two or three times and then tied (using only one knot). Should one desire to use silk-worm-gut sutures, the ends of the muscle could be easily approximated by a figure-of-eight suture, bringing the ends of the sutures out through the tissues on either side and tying. It is advisable to catch up the connective tissue freely about the muscle

with the suture to lessen the danger of the sutures cutting out and the muscle retracting. When the suture is completed the muscle is allowed to drop down to the bottom of the incision. A test of good approximation of the muscle is a restoration of the corrugations of the skin that normally surround the anus.

The remainder of the operation is the same as for relaxation of the vaginal outlet, and may be done by an Emmet or Hegar operation, according to individual preference or the extent and variety of the injury to the levator ani muscle. Watkins gives a picture in his article illustrating a Hegar denudation, and also one of the operation completed. He calls attention to the distance of the sutures from the anus, and also that the sutures in favorable cases will all be in the vaginal canal. There will be found on passing the finger into the rectum normal muscular resistance and absence of constriction of the skin about the anus.

ISCHOCYHIA SIMULATING GALL-STONE DISEASE.

EINHORN (*American Journal of Surgery*, June, 1908) under this title, by which he means dilatation of the stomach, describes cases which in their general symptomatology somewhat resemble attacks of gall-stone disease. In the case of dilatation, however, he notes that the attacks do not come on abruptly. The pain is rarely so severe as to require the use of morphine; the vomitus contains the food of the day before and relieves pain. Dilatation of the stomach can be demonstrated by examination. Hyperperistalsis is usually visible. Examination of the stomach shows that there is residuum. There is no enlargement of the liver, no jaundice, no fever, and the affection is more frequent in men than in women. He particularly calls attention to the importance of examining the stomach contents in all cases of cholelithiasis, especially when the diagnosis is not absolutely positive. It may happen that both diseases are present; such cases are not frequent, but they do occur.

THE TREATMENT OF THE UNDESCENDED OR MALDESCENDED TESTIS ASSOCIATED WITH INGUINAL HERNIA.

COLEY (*Annals of Surgery*, September, 1908) concludes his article upon this subject, based on an extraordinary personal experience, as follows:

The undescended testis is almost invariably of little or no functional value. It often gives rise to considerable pain and is more subject to inflammatory attacks than the normally descended organ, and possibly (although this is by no means proven) is more subject to malignant changes.

The undescended testis should never be sacrificed in children and very rarely in adults, it having been proven possible to effect a radical cure of the hernia quite as well without the removal of the organ. In childhood the testis, even if it never attains any functional value, is nevertheless of value in developing the male characteristics of the child as well as in promoting his general health. In the adult it should be retained for its influence upon the mentality of the subject, if for no other reason.

Operation should seldom be performed under the age of eight to twelve years, unless the accompanying hernia demands such operative intervention, for the reason that in a considerable number of cases the testis descends spontaneously on the approach of puberty, unless double.

Abdominal ectopia unless double had best be left untreated, inasmuch as operation is difficult and by no means free from risk.

As to methods of operation, the main principles of any operation likely to yield satisfactory results must be free opening of the inguinal canal, which is secured by Bassini's incision; thorough freeing of the testis from any adhesions or peritoneal bands, even with the sacrifice of some of the veins, if necessary; bringing the testicle into the scrotum; suture of the canal without transplantation of the cord.

The present tendency in favor of giving up all forms of suturing the testis, either to the scrotum, the other testis, or the thigh, is fully justified.

Inasmuch as very satisfactory results may be obtained without cutting away all the structures of the cord except the vas and its vessels, Coley believes this more radical step very seldom indicated.

No case of double undescended testis should be allowed to reach the age of puberty without operation.

STARR, writing upon the same topic, reports two cases in which he adopted the following technique in bringing the testes to their proper position and holding them there:

An incision about one inch long is made over the external abdominal ring; the testicle is secured and brought out of the wound. The finger is then carried down into the scrotum, and by means of blunt dissection the scrotal sac is stretched to make a suitable resting-place for the testis. The cord is then dissected free of its coverings, and if necessary to secure increased length the cremasteric and spermatic arteries may be sacrificed, but the artery to the vas must not be interfered with. It is well now to see that the testicle can be easily replaced in the pocket, provided there is no tension upon the cord. It is again taken out and sutured by means of chromic catgut No. 0 through the tunica albuginea to the loops of a piece of plaited silver wire, two or three inches long, as may be required. The wire ends are then pushed against the bottom of the scrotum and cut upon to permit of their being pushed through. The free ends are then bent. To make assurance doubly sure, two horsehair sutures are passed up through the tiny opening in the scrotum, from which the wire projects, one on each side of the wire shaft, to catch the tunica albuginea. They are brought out again and tied over the projecting wire ends. The loop of the wire shaft is now sutured by means of 10-day chromic catgut No. 1 to the periosteum over the os pubis. The testicle is thus securely placed in the scrotum and is maintained there by means of a silver wire splint. The operation is completed by introducing through the skin, at one end of the incision, a horsehair suture which travels subcutaneously, taking

up the spermatic fascia and divided cremasteric muscle over the cord. It is brought out again through the skin, at the opposite end, carried over the top of a small roll of gauze, and continued along as an uninterrupted stitch, to bring the skin edges into apposition. The two free ends are tied over another small roll of gauze. The wound is carefully dressed with plenty of pads and a double spica applied. On the twelfth day the dressing is removed, and the cutaneous horsehair, snipped at one end, is then easily withdrawn. The two horsehair stitches are now cut and removed, when the end of the wire is grasped with a pair of forceps and the wire splint removed.

TRANSPLANTATION OF OVARIES.

MARTIN (*Surgery, Gynecology, and Obstetrics*, July, 1908) concludes an admirable paper covering both clinical and laboratory experience as follows:

The operation of homoplastic or heteroplastic transplantation of the ovaries in women, or in lower animals, is no more dangerous if accomplished aseptically than any other small plastic operation on the appendages.

Homotransplantation of ovaries in women, or in lower animals, will prevent the atrophy of the genitalia which usually follows castration. Heterotransplantation may be followed by the same result.

It is not yet satisfactorily demonstrated that heterotransplantation of the ovaries in a considerable number of cases will give permanent relief from the nervous symptoms produced by the menopause or prevent atrophy of the genitalia otherwise following castration.

Transplantation of ovaries from one species into another may result in preventing the ordinary changes in the genitalia resulting from castration.

Menstruation will continue in women and monkeys after homoplastic transplantation of ovaries.

Conception has followed both homo- and heterotransplantation in animals.

Conception has followed homotrans-

plantation of the ovaries in women and has also been reported as following heterotransplantation.

Heterotransplantation of the ovaries should be accomplished as soon after the primary operation in which the receptor's ovaries have been sacrificed as possible, before the menopause has become established and the genitalia atrophied.

Transplanted ovaries in other localities than the normal will maintain their vitality, functionate, and prevent ordinary sequelæ of castration.

RADICAL OPERATION FOR THE CURE OF CHRONIC OTITIS MEDIA.

PHILLIPS (*Medical Record*, Oct. 10, 1908) holds that the radical operation is indicated: (1) When a permanent cessation of the purulent process has not been effected by prolonged local intratympanic treatment, combined if necessary with such minor operation as removal of granulations, enlarging perforation, etc. (2) When the cure has not been effected by the removal of necrosed ossicles and the curettage of the middle ear. (3) When acute symptoms of mastoiditis are present. (4) When a sudden cessation of the pus discharge produces vertigo, pain, or other unusual symptoms. (5) The appearance of facial paralysis during the course of chronic purulent otitis media. (6) Attacks of vertigo, indicating that the necrotic process involves the labyrinth. (7) In all cases in which intracranial or lateral sinus involvement has already appeared. (8) Where there are positive symptoms of cholesteatoma in the mastoid antrum. (9) Where there are fistulous openings in the cortex of the mastoid process or in the osseous canal wall. (10) Whenever extreme depression or other symptoms of disturbed mentality accompany the disease.

The operation is contraindicated: (1) When the purulent process is tuberculous and accompanied by advanced general tuberculosis. (2) In advanced pernicious anemia or albuminuria and in cachectic diabetes. (3) It is usually contraindicated

in young children. (4) In all cases in which the disease is confined to the ossicles and tympanic cavity. (5) In adults who have scanty otorrhea without odor, with improper opening of the drum membrane, behind which are retained masses of secretion. (6) In all cases in which it is possible to effect a cure by any of the other methods described.

It will be thus seen that the percentage of cases which should be subjected to the radical operation is not large, and in actual practice the statement holds true. It is also true that during the past five years too little discrimination has been employed in the selection of suitable cases for the operation. This should in no wise lead us to belittle this most important surgical procedure, for when properly performed in severe and dangerous cases of chronic otitis media it is the only safe and life-saving procedure known to surgery.

The question naturally arises as to how long local measures should be employed in chronic cases before being abandoned for the radical operation. What may be considered a reasonable length of time for such treatment? It is impossible to establish rules that will hold good for all cases, on account of the extreme variations in the character of the disease in different individuals. The general condition of the patient, his freedom from underlying organic diseases, the absence of odor or serious symptoms when free drainage exists, should lead one to persist in local treatment.

THE PRINCIPLES UNDERLYING THE TREATMENT OF ACUTE INTES-TINAL OBSTRUCTION.

After a general discussion of the subject SCUDDER (*Boston Medical and Surgical Journal*, Oct. 15, 1908) quotes Clubbe's statistics to the effect that of 124 cases of infantile intussusception operated upon by this surgeon there were 40 deaths; whilst in the last 24 cases there were but three deaths, this contrasting with the general mortality of about 52 per cent. This is attributed to the fact that physicians about

Sydney, Australia, have come to recognize the meaning of the initial signs of intussusception—that is, the sudden screams of the child, the characteristic pallor, and the vomiting—and have learned to properly interpret the apparent recovery from this acute onset and the recurring crises as the picture of acute intussusception. He states that we should all continually carry in our mind's eye the two great classes of obstruction, the non-mechanical and the mechanical; that the operation should be practiced as soon as the diagnosis is made, incision being made in the middle line below the umbilicus.

As to early postoperative ileus, the incision is best made through the abdominal wall and not through inflamed tissues. If the patient is very ill local anesthesia may be employed. For relief of the obstruction washing out of the bowel is advocated, hot normal salt solution being used. If the gut is evidently dead resection should be practiced; if the patient is too ill to make an immediate anastomosis, the two divided ends should be attached to glass tubes and drawn outside of the abdominal incision or well into it after having caught together the mesenteric borders of the gut. At an early date—i.e., as soon as the patient first recovers from the initial shock—anastomosis should be practiced. Scudder quotes Storp to the effect that two-thirds of the intestine may be resected in man without fatal or even deleterious result.

Postoperative intestinal obstruction with its 60 per cent mortality may be avoided if there is absolute hemostasis maintained, if asepsis is secured, if the parts operated upon are replaced so far as is practicable in their normal positions.

Scudder reports 121 cases of acute intestinal obstruction from the Massachusetts General Hospital clinic for the ten years previous to 1908.

There were 37 cases of postoperative intestinal obstruction; 18 of these occurred early after operation, that is before the abdominal wound had healed, usually within five or ten days of the original operation, always secondary to appendectomy with

abscess. All were due to adhesions. Of these 18 acute postoperative cases, 13 died. Nineteen cases of postoperative obstruction occurred late—that is, from one month to 2½ years following operation. Thirteen of these recovered and six died. The cause of obstruction was in each case a band or an adhesion. Of 33 cases of intestinal obstruction from bands or adhesions not postoperative, 15 recovered and 18 died. Nearly all the bands and adhesions were situated near the cecum. In most cases the ileum was involved primarily in the obstruction. All were operated on fairly early. In nine cases of obstruction by Meckel's diverticulum, two recovered and seven died. In nine cases of volvulus; all died. Of 27 cases of intussusception the total mortality was 52 per cent. The total mortality in 121 cases was 60 per cent. From this list were excluded all strangulated hernias and all obstructions due to tumors.

CONGENITAL STENOSIS OF THE PYLORUS IN THE ADULT.

RUSSELL (*British Medical Journal*, July, 1908) observes that the occurrence in the adult of congenital stenosis must be accepted as an established fact. Maylard is quoted to the effect that "there exists a considerable class of patients in young adult life who owe their chronic gastric trouble to a congenital narrowness of the pyloric orifice." Russell's contribution admirably summarizes histories of three cases. The diagnosis is based upon a long history of stomach trouble, or of such digestive difficulties that the patient has learnt to be very careful as to the character and the quantity of food taken, and to allow a sufficient number of hours to separate meals.

On the intelligence with which diet has been regulated depends the further history. There may be a history of supposed bilious attacks dating back into childhood. In one case the patient as a boy had at varying intervals of time attacks of vomiting, which lasted for a day or two. He had had these when his feeding was his share of the food provided for the family, yet none of his

brothers or sisters had similar attacks. As he grew to manhood he had learned great abstemiousness in eating and drinking, and thus saved himself from a frequent repetition of acute digestive disorder. In one case the patient had similarly learnt by experience how to regulate her diet. In another case, where possibly the stenosis may have been less pronounced, there was a definite history of preceding attacks of severe digestive disorder with stomach dilatation. In all three patients previous attacks had been overcome by ordinary dietetic and medicinal means; they came to hospital because ordinary means had failed, and ordinary means failed in the writer's hands also.

The symptoms are those of stomach dilatation or of gastric dyspepsia, vomiting only occurring in the more severe attacks. The attacks of stomach disorder tend to become intensified as they are repeated; and as Mayo Robson has observed, something happens, often not till life is fairly advanced, which brings out the pyloric difficulty and leads to all the symptoms of pronounced pyloric obstruction.

At the stage when these cases are likely to come to hospital stomach dilatation is easily made out on physical examination. In two of the writer's three cases gastric peristalsis could be induced. In Case 1 the dilatation and gastric atony were too pronounced to allow of this sign being elicited. When gastric peristalsis can be induced the pyloric end of the stomach also contracts and is easily located. In the writer's three cases there was no permanent—that is to say, continuous—pyloric thickening. The cases being examples of the simple form account for the absence of this sign, whereas in the combined or hypertrophic form there is permanent thickening, although the degree of thickening will vary from time to time. The absence of continuous pyloric thickening is a most important diagnostic point, but the negation of course assumes that the pylorus can be located through the parietes.

Pyloric spasm or cramp is recognized as an important symptom. When spasm oc-

curs, the pylorus hardens and thickens; when spasm relaxes, the pylorus softens. The two phases can usually be followed easily by the hand placed over the pylorus, as the patients are lean with a lax abdominal wall. The spasm can be caused by the irritation of the stomach contents, by structural lesion at or near the pylorus, or even by nervous disorder. Spasm occurs both with and without permanent hypertrophic or hyperplastic thickening of muscular and fibrous tissue. Such permanent thickening is also not a necessary accompaniment of pyloric narrowing; in fact, in the writer's three cases there was no thickening, and reference has been made to similar observations by others. When spasm is present there is thickening, and in this way spasm often enables us to locate with certainty the position of the pylorus, while the knowledge thus gained of its position serves to definitely determine after spasm has relaxed whether structural thickening has remained. When structural thickening remains, the question of its cause remains to be decided.

The chemical examination of the stomach contents, especially the determination of the presence or absence of free hydrochloric acid, should, of course, never be omitted, for the result materially influences the formation of an opinion.

The diagnosis in the case of simple stenosis is determined by the existence of pyloric difficulty, the character and duration of the symptoms, the absence of permanent pyloric thickening, the presence of free hydrochloric acid in the stomach contents, the exclusion of ulcer, and of a history that would fit in with cicatrix from previous ulceration. When there is permanent thickening the *benign* causes, when ulcer is excluded, are congenital hypertrophic stenosis, and cicatrix from healed ulcer. The field for differential diagnosis can thus be greatly circumscribed and simplified. In fact, once the possibility of congenital stenosis occurring in the adult enters the clinical field of vision, it will be found to be quite within the differential diagnostic skill of the physician.

The treatment might be summed up in

the words of Lambert and Foster when discussing benign stenosis of the pylorus, namely: (1) Control excessive secretions; (2) reduce pyloric irritability; and (3) increase the muscular activity of the stomach wall. When dietetic and medicinal measures are no longer sufficient to enable a patient to nourish himself, the physician can, fortunately with confidence, advise the patient to submit to surgical operation.

CANCER OF THE COLON.

CLOGG (*Lancet*, Oct. 3, 1908), on the basis of a study of 72 cases of cancer of the colon, observes that when there are secondary visceral deposits these are found in the liver or the ovary, but that the disease is essentially a local one and that such secondary deposits constitute only in a small percentage of cases a barrier to operation. When the growth is in the cecal region he noted that glands were always found in the ileocolic angle. In individual cases there was extension along the inner border of the colon or the upper border of the ileum or behind the growth. In some cases the enlarged ileocolic glands extended nearly to the bifurcation of the ileocolic artery.

The operation should be one that removes the cecum, ascending colon nearly to the hepatic flexure, the retroperitoneal tissues and the leaf of peritoneum covering the vessels, the lower six inches or so of the ileum, and the termination of the mesentery corresponding to the ileac branch of the ileocolic artery. * The incision is carried through the right semilunar line and the peritoneum is divided to the outer side of the cecum and ascending colon, the incision being carried boldly as high as the kidney and thereafter cautiously until the colon is separated from the kidney and duodenum. The cecum, ascending colon, and some retroperitoneal tissue are then stripped up the posterior abdominal wall toward the midline, the ureter and spermatic vessels being exposed and preserved. The lower ileum, cecum, ascending colon, and some retroperitoneal tissue can then be drawn out of the abdominal cavity. The colon is cut

somewhere about the level of the hepatic flexure, and in thin subjects the vessels can be recognized upon the peritoneum. These are the right colic and the ileocolic arteries. They as often as not come from a common trunk. If the section is carried from above downward, the first large vessel will be the right colic artery. When the common trunk or the separate branches have been divided the section is carried down to the lower ileum so as to remove about six inches of it. Particular attention must be paid to the last intestinal branch of the superior mesenteric artery, which should not be injured unless a corresponding length of small gut is removed. The section of the small gut should be so planned as to lie at the junction of the anastomosis of the ileocolic and superior mesenteric arteries. The end of the divided colon is closed; the ileum is joined to the most accessible part of the transverse colon.

Growths in the hepatic flexure would seem to be peculiarly bad from the surgical standpoint. The arrangement of the peritoneum here varies. There is often no mesentery to the colon which is in intimate contact with the duodenum and pancreas, hence adhesions are early in these growths and excision most difficult. The hepatic flexure is made mobile by free division of the peritoneum on the outer side of the ascending colon and the serous membrane as it passes from the colon to the liver. If the gastrocolic omentum be also divided a considerable range of mobility is given to this part of the colon. Section of the bowel may be begun at the transverse colon and will be somewhere about its middle. The right branch of the artery may be cut. If the ascending colon has been freed by division of the peritoneum along the outer aspect it probably may be joined to the cut end of the transverse colon.

The splenic flexure seems to be a favorite seat of cancer. The involved glands lie in the mesocolon near the original growth. In cases of cancer of the pelvic colon glandular involvement is usually found between the layers of the mesentery and not extending along the course of the blood-vessels.

Cancer of the sigmoid is treated by resection of the loop with the contained mesentery to the origin of the sigmoid vessel. It is easy to ligature the inferior mesenteric trunk nearly at its origin, with the removal of the tissue around it. In cases examined with glands along these vessels this would not have been sufficient.

A long left paramedian incision gives the best access. The peritoneum is then divided in the iliac fossa to the outer side of the colon; this division may extend up some distance along the descending colon if necessary, and may be prolonged downward into the pelvis. The colon and the retroperitoneal tissues are stripped up from the iliac fossa over the ureter and spermatic vessels, which are seen and guarded, it being necessary to expose these before the incision is carried down into the pelvis. This freeing of the colon may be carried on until the inferior mesenteric artery itself is seen. The intestine is divided above and the incision in the mesentery is carried in to the trunk of the sigmoid artery, which is ligatured. The incision is then carried down the mesentery, so planned as to avoid the superior hemorrhoidal artery, which will be found in close proximity to the pelvic brim. The lower end of the colon is divided somewhere about the level of the pelvic brim, thus securing the integrity of the superior hemorrhoidal artery and leaving sufficient stump to enable an intra-abdominal anastomosis to be performed.

The main symptoms of a cecal growth are pain, colicky or persistent, absence of true obstruction, normal regularity of the bowels, and the presence of a tumor, associated with a progressive loss of flesh and deterioration of health. There is often a little fever. The age incidence is from thirty to over seventy years. For growths elsewhere than in the cecal region the age incidence ranges from the youngest at fifteen to the oldest at eighty-nine. The onset of symptoms can practically in all cases be dated with precision. It is characterized by recurrent spasms of pain, gurgling, flatus, and intestinal discomfort; at times subacute obstruction. Suppurative peritonitis oc-

curred in twelve of the reported cases. In a limited number of cases operations are encouraging.

TUBERCULOSIS OF THE URETHRA.

DELORE and CHALIER (*Gazette des Hôpitaux*, 1908, p. 639), after conceding that tuberculous involvement of the urethra and the periurethral structures is usually secondary to involvement of the higher urethra or spermatic tract, hold that there is a true primary tuberculous urethritis which is of hematogenous origin. This form of urethritis they note is commonest in men, and they observe that gonorrhea constitutes a predisposing favoring condition. A primitive tuberculous posterior urethritis is characterized by the gray granulations, exceptionally tuberculous ulcers, usually placed upon the sides of the verumontanum and about the orifices of the prostatic glands. Later there is extensive destruction. Exceptionally spontaneous cure occurs by cicatrization.

The characteristic signs of tuberculous urethritis are pain, tenesmus, frequent urination, with pus and shreds in the urine. Cases thus afflicted usually have a tuberculous family history and often lesions elsewhere. Bleeding is not infrequent in the urethra. Nitrate of silver is regarded by the author as diagnostic from the fact that it greatly aggravates the suffering. Bacteriological examination of the discharge is the most convincing method of deciding the nature of the affection if the endoscopic findings be excepted. With due attention to health there seems to be a spontaneous tendency toward cure.

The treatment advised is perineal prostatotomy with incision of the vesical sphincter. This does away with painful spasm, allows the surgeon to determine whether lesions are or are not limited to the mucous membrane, and may be supplemented by the use of the actual cautery. This operation is indicated only when a posterior urethritis is extremely painful and accompanied by violent spasm of the sphincter.

Tubercular anterior urethritis is never primitive. It is characterized by pain, burning, and discharge. Diagnosis is made by the urethroscope and inoculations. If the lesions are multiple and wide-spread, or sequent on infection higher up, treatment is of little service. The author has described tuberculous stricture, the existence of which has only recently been recognized, Guyon's dictum having been generally accepted. This is to the effect that strictures of the urethra are always gonorrheal, traumatic, or cicatricial. When the patient denies any of these causes the surgeon can be perfectly certain either that there is no stricture present or that the patient is lying.

The treatment advised is gradual dilatation when this is practicable. Internal urethrotomy or urethrectomy at times may be employed. Suprapubic cystotomy is useful when lesions are extensive. Tuberculous Cowperitis may be in the form of cold abscess, or may develop entirely within the gland. Excision is indicated.

MESENTERIC RUPTURE FROM ABDOMINAL CONTUSION.

REINECKE (*Münchener medicinische Wochenschrift*, Sept. 8, 1908), after quoting the generally recognized fact that as the result of severe abdominal contusions mesenteric rents in the direction of the long axis of this structure, either with or without associated bowel tear, are frequent, whilst transverse mesenteric tears resulting in the detachment of the bowel are rare, reports the case of a 41-year-old man, who as the result of a severe abdominal contusion suffered immediate and agonizing pain and profound shock. He exhibited a swollen, rigid, tender belly, together with fracture of the pelvis. The abdomen on operation was found filled with blood, about one liter being evacuated. The ileum for a distance of about 22 centimeters, beginning at a distance of 3 or 4 inches from its ileocolic junction, was torn free from its mesenteric attachment. There was a further rip in the mesentery running upward and extending for about 12 centimeters. The intestine,

though not open, exhibited all the signs of impaired circulation. Fifty-four centimeters was resected. The cecal end was invaginated, and the upper end implanted into the ascending colon. During the operation camphor injections and intravenous salines were given. With the exception of an attack of pneumonia the patient recovered without incident.

THE TREATMENT OF CERVICAL SPONDYLITIS.

LEHR (*Archiv für klinische Chirurgie*, Bd. 87, Heft 2) describes an extension bandage in use in Schanz's clinic for the treatment of cervical spondylitis. It is recommended on account of its simplicity and because it permits the patient to go about. It was devised originally by Schanz for the treatment of congenital wryneck, but has since proven the most important means of treating cervical Pott's disease.

The material used is cotton wadding. The patient lies upon an operating table, and the head is slightly bent backward by an assistant. Then several layers of wadding are placed around the neck and this held fast with a muslin bandage. Slight cyanosis of the face shows that the bandage is tight enough. After the patient gets accustomed to the bandage and ceases to struggle against it, and the wadding becomes compressed, the cyanosis disappears. The bandage presses against the head and the shoulders, and on account of its elasticity makes extension upon the neck. It also brings about fixation. When the bandage becomes loose by compression of the wadding it is made tight again by putting more bandage over it. If it becomes separated from the head or shoulders, it can be tightened here by introducing more wadding and holding it in place by more bandage. As a rule it will go one-half to one week without attention.

The bandage needs to be changed in entirety only at rare intervals. So long as pain is present the patient is kept in bed, but as soon as the pain has disappeared he is allowed to walk about.

REVIEWS.

THE PRINCIPLES OF PATHOLOGY. By J. George Adami, M.A., M.D., LL.D., F.R.S. Volume I, General Pathology. Illustrated. Philadelphia, Lea & Febiger, 1908.

Because of the author's prominent position as a teacher of pathology and writer upon pathological subjects, the appearance of this work by Professor Adami was awaited with more than usual expectancy. This expectation has been met by a book that marks a distinct departure in text-books upon pathology in the English language. It has been written from the standpoint, as the author states in his preface, that, whatever may be true of other subjects, a text-book of pathology "should be a training in medical thought." Sustaining his reputation for living up to his convictions, however they may depart from the conventional, Professor Adami has produced a book that cannot be measured by our usual standards of comparison. In it will be found no routine presentation of bare pathologic facts, no condensed data in one, two, three order to which the busy student may turn and hurriedly cram for an examination. The book is offered, not as a "description of phenomena," but as "the attempt to analyze those phenomena in an orderly manner." The author recognized that it was one thing to hold such views regarding what a book should be and another thing to embody them in a treatise. Judging from the book before us, however, we should say he has succeeded admirably in his purpose. As this is only Volume I of a two-volume work, it would be unfair to speak at this time of the general arrangement of the topics, even though some points commonly considered under general pathology have been reserved for the second volume upon special, or, as Professor Adami prefers to designate it, systemic, pathology. A discussion of the plan of the book must therefore be deferred until the completed work is at hand. At present a brief sketch of the contents of Volume I will suffice.

Section I, of 178 pages, deals with the

general properties of living matter, being devoted to the histology, physiology, chemistry, and method of growth of the cell, and, based on these considerations, the principles of inheritance. Throughout this section the biophoric theory of living matter is the key-note and is very clearly presented.

Section II, 194 pages, is devoted to consideration of the Causes of Disease. Of the four groups, mechanical, physical, chemical, and parasitic, the third only is discussed at length. For knowledge regarding the physical the reader is referred to works on hygiene, for more than a brief mention of animal parasites, to text-books on parasitology. In this section are considered Monstrosities and Abnormalities, an unusual placing of those topics.

Section III, dealing with the Morbid and Reactive Processes, is divided into two parts. Part I, "The Morbid and Reactive Processes Proper," 160 pages, includes Inflammation, the Process of Infection, Immunity, and Shock. The chapters on immunity are devoted almost wholly to a discussion of the side-chain theory of Ehrlich. With this theory Professor Adami agrees almost in its entirety, but suggests a modification of Ehrlich's conception in order to harmonize with it the conclusion that toxins are bodies of the same order as enzymes.

Part II of Section III treats of "The Tissue Changes"—progressive, including neoplasms (265 pages), and regressive (117 pages). The division, upon histogenetic lines, of neoplasms into the lepidic and hylie groups is still followed by the author, who states that he finds these terms of value as a framework around which to group ideas, but that he does not employ them for daily clinical purposes. This conception is ingenious and is based, as here shown, on a similar classification of normal tissues. That this use of one set of names for dress parade, as it were, and another for everyday use will become popular we very much doubt.

In an Appendix of four subjects, Professor Adami touches upon the problem of intercellular substance being regarded as living matter, upholding the negative of the question in a criticism of Heidenhain's work upon this subject.

The illustrations of the book are largely borrowed, owing to the fact that most of those collected for this purpose were destroyed by fire while the book was being put in type. Because of the judicious selection that he has made, however, the text is very satisfactorily illustrated.

As a whole, this volume is a distinct addition to the works on pathology in the English language. For the graduate physician who wishes to inquire into the why and wherefore of pathologic thought it is a very satisfactory treatise and thoroughly to be recommended. For the undergraduate also it furnishes excellent collateral reading and reference, but will not, we believe, supplant the more condensed works as an every-day text-book. For this purpose it is too voluminous, and this leads us to express the belief that the book could easily be shortened 100 pages without crippling it, either in aim or in execution, but on the contrary making its ideas more readily accessible to the busy reader. In other words, if Professor Adami had condensed the more speculative parts (particularly those on inheritance and immunity, and numerous other topics as well) with something of the vigor with which he applied the pruning knife to many of what might be called the more practical points, we believe the book would have been better balanced.

Finally we would suggest to the publishers the use, in future editions, of thinner paper, as a half or three-fourths inch from the thickness of the present somewhat bulky volume would add greatly to comfort and convenience in its handling. A. G. E.

A TEXT-BOOK OF GENERAL BACTERIOLOGY. By Edwin O. Jordan, Ph.D. Pp. 557. Illustrated. Philadelphia and London: W. B. Saunders Company, 1908. Price, \$3.00.

This book is offered neither as a laboratory guide nor an exhaustive treatise on Bacteriology, but as an introduction to the subject for the general scientific student.

The author holds that while bacteriology is of professional interest chiefly to the student of medicine, it bears such technical relations to agriculture, sanitation, household administration, and various industries that some knowledge of the subject should be acquired by every student in a general scientific course. On this point we are entirely in accord with the author, and as an aid in promulgating that knowledge the book he has offered will, we believe, prove very serviceable.

The first 160 pages are devoted to the history of bacteriology, methods of studying bacteria, their composition, effects produced by their growth, effect of physical and chemical agents upon bacteria, their relation to disease, and immunity. These chapters are full of information for the beginner and contain the necessary details of technique to make them intelligible. A two-page insert is a copy of the Identification Chart adopted by the Society of American Bacteriologists.

Pages 161 to 378 deal with the special characters of the various bacteria. Then follows consideration of the pathogenic spirilla, the tricho-, blasto-, and hyphomycetes, and the pathogenic protozoa. The final chapters deal with the bacteriology of milk and milk products, bacteria and the nitrogen cycle, bacteria in the arts and industries, bacteria of air, soil, and water, and the bacterial diseases of plants.

In an appendix are discussed infectious diseases of unknown causation. The character of the book as a conservative and reliable presentation of present knowledge is shown by the inclusion in this group of smallpox, rabies, yellow fever, scarlet fever, measles, and Rocky Mountain spotted fever, the etiology of at least some of which is by enthusiasts regarded as already settled.

Dr. Jordan possesses in a high degree the faculty of expressing his thoughts in clear, concise language, and this makes the book readable, interesting, and therefore instructive. As indicated in our brief sketch of the contents, the practical bearings of bacteriology are made prominent, though in their presentation strictly scientific features are not in the least degree sacrificed. In

our opinion the book is very well adapted to its purpose.

The illustrations as a whole are good, though some microphotographs, as in most works on bacteriology, leave very much to the imagination. A goodly number of references to the literature are furnished, and the presswork is excellent. A. G. E.

PATHOLOGICAL TECHNIQUE. A Practical Manual for Workers in Pathological Histology and Bacteriology, including Directions for the Performance of Autopsies and for Clinical Diagnosis by Laboratory Methods. By Frank Burr Mallory, A.M., M.D., and James Homer Wright, A.M., M.D., S.D. Fourth Edition, Revised and Enlarged, with 152 Illustrations. Philadelphia and London, W. B. Saunders Company, 1908.

Mallory and Wright's Pathological Technique has become a standard handbook of all laboratory workers who have become familiar with the volume. In eleven years it has entered upon its fourth edition, and no important alteration in the plan of the work has been made. Necessary deletions have removed obsolete methods, and the space so obtained has been utilized to the best advantage. Among the available means for identifying the typhoid bacillus have been incorporated those of comparatively recent origin which have stood the test of experience.

The text is divided into three parts: Part I, Post-mortem Examinations; Part II, Bacteriological Methods; Part III, Histological Methods. The chapter treating of post-mortems and the succeeding part devoted to bacteriological methods have been but slightly changed; in the former the reviewer observed no alteration whatever. The paragraphs on the cultivation of anaerobic bacteria have received no important additions. The simple expedient of an overlaid stratum of fluid oil, or of the more solid petrolatum or even paraffin, is not mentioned.

In view of the work of Schaudinn, Craig, Stiles, and others it seems unfortunate that the name *amœba coli* should be perpetuated; at least some mention of the more recent work might have been made. For a study of living *amœbæ* in the stools the advantage of avoiding admixture with urine should certainly have been stated. It is to be regretted that dogmatic conciseness without

latent error is not possible in medical books. In the article on examination of the blood such clinically available instruments as those of Gower and Sahli and the simple scale of Talquist might have been mentioned; many workers have discarded the more accurate von Fleischl instrument for Dare's convenient hemoglobinometer.

As a rule the directions given are clear, concise but ample, and accurate. Exceptions to this rule, however, occur. Let any novice try getting good results by the hazy, indefinite, and sketchy description of the Kaiserling method given in less than 20 well-led lines (p. 382), which also include the formulas; if he succeed luck must be with him. With the splendid improvements in museum technique it would seem reasonable for the reader to expect that this admirable method should not be slightly treated through four editions of so valuable a book. Unless thymol or camphor be added to the final preservative molds sooner or later bring disastrous results; this is especially true in warm climates. Those who have had an opportunity to examine the beautiful preparations attainable by Pick's method come away converts.

The illustrations are exceptionally good; the presswork and paper are superior; the binding is acceptable. "Mallory and Wright" may well continue to hold its position among laboratory workers. W. M. L. C.

PATHOGENIC MICROÖRGANISMS, INCLUDING BACTERIA AND PROTOZOA. A Practical Manual for Students, Physicians, and Health Officers. By William Hallock Park, M.D., assisted by Anna W. Williams, M.D. Third Edition, Enlarged and Thoroughly Revised, with 176 Engravings and 5 Full-page Plates. Lea & Febiger, New York and Philadelphia, 1908.

A book of this type, of which new editions appear every third year, is in a position which requires no commendation, and having previously received the approval of critical buyers is above the lances of carping reviewers. The senior author knows what the market demands, and, in collaboration with his valuable aid, has supplied its needs.

The work of Dr. Park and Dr. Williams follows the usual lines. The first seventeen chapters are devoted to the general biology

of bacteria, and are followed by Part II, which treats of the bacteria, pathogenic to man, which are individually considered. Part III, embracing 120 pages, is devoted to animal parasites. The spirochætæ are placed with the animal parasites, but at the same time the author presents the views of those who class them with the bacteria. This section includes most of the microparasites of importance in human pathology.

In the discussion of sewage it would have been helpful to the students had the authors stated what is meant by "septic tank," "contact beds," and similar terms. The succeeding chapter, on the Bacteriology of Milk, is thoroughly practical and accurate. The technique given in different parts of the book is usually satisfactory and adequate. It may be the individual opinion of the reviewer, but it certainly seems proper to include Pappenheim's method among those useful for the routine demonstration of tubercle bacilli.

As the book contains many terms not at present found in the dictionary usually accessible to medical students, the authors have seen fit to add a glossary. That this should contain aggressin and anaphylactin seems entirely proper, while karyokinesis and mitosis would seem redundant. The illustrations are of good quality and fairly adequate, the presswork and binding satisfactory. The volume can be cordially recommended.

W. M. L. C.

A TEXT-BOOK OF THE DISEASES OF WOMEN. By Charles B. Penrose, M.D., Ph.D. Sixth Edition. Illustrated. Revised. W. B. Saunders Co., Philadelphia and London, 1908.

The sixth edition of Dr. Penrose's book needs no introduction. It has always been a scholarly and concise presentation of the subject, and is especially valuable in that it is a result of personal experience, being in no sense a compilation.

There has been no attempt to describe many operative procedures, but in every case the one given has been tried and proven, and is the one which has been followed by the author.

The literary style is free and simple, the entire book making most entertaining reading.

Specially worthy of mention is the chapter on lacerations of the pelvic floor, which is by far the clearest and most readable article on these lesions and their repair that the writer has yet encountered. The teaching in regard to fibroid tumors of the uterus is thoroughly modern, much stress being laid upon the possible degenerations of these growths and their associated lesions.

The technique of celiotomy described is that followed by the author and is given in excellent detail, well correlated and without confusion. The various lesions of the genital tract are clearly described, from the standpoint of pathology, with the possible criticism that malignant adenoma, which is discussed at length, is no longer recognized as a distinct variety of tumor. The illustrations are fairly good, the presswork excellent, and taken as a whole the book is, as has been stated, a clear, practical, and scientific treatise on gynecology.

E. A. S.

A SYSTEM OF MEDICINE. Edited by Sir Clifford Allbutt and Humphrey Davy Rolleston, M.A., M.D. Volume IV, Part I. The Macmillan Co., London and New York, 1908.

The fourth volume of Allbutt's original "System of Medicine" which appeared some years ago has in the new edition been divided into two parts, the sections upon the diseases of the upper respiratory passages, which originally covered 200 pages, appearing in a separate volume and being very much more thoroughly discussed therein. The present volume deals with diseases of the liver, the pancreas and ductless glands, and the kidney. In connection with disorders of the liver there is an article upon delayed chloroform poisoning and tropical abscess. The articles upon diseases of the thyroid gland have also undergone an extensive revision. Dr. Murray, whose name is so well known in connection with the subject of myxedema, has written an entirely new account of this interesting disease. There is also an article upon edema, by Professor Halliburton, which is placed in this volume in order to be in juxtaposition with diseases of the liver and kidney, which diseases perhaps most frequently cause this state. A new article upon nephritis has been added by Professor J. Rose Bradford.

and those renal affections which lie in the middle ground of medicine and surgery have been introduced by Mr. Henry Morris.

The first edition of Allbutt's System took so high a rank in medical literature that words of commendation are entirely unnecessary. All that need be said of the second edition is that it is better than the first. Surely this is a high recommendation.

A MANUAL OF OBSTETRICAL TECHNIQUE. By Joseph Brown Cooke, M.D. Sixth Edition, Illustrated. J. B. Lippincott Co., Philadelphia, 1908.

The first edition of this very small manual appeared in 1900. The author has not attempted to increase its size materially since then, and has adhered to his original plan of making it a vade-mecum for physicians and nurses. In its 18 chapters he discusses pregnancy, the patient's outfit, the physician's outfit, the puerperium and normal labor, the use of instrumental measures in delivery, the douche, Cæsarian section, the different forms of abortion, and the duties of the obstetrician and obstetrical nurse. A number of excellent illustrations are included in the volume, evidently made from photographs of patients actually in the process of delivery. These, perhaps, will prove more interesting to the student and nurse than some of those found in much more complete manuals. The book is not one which is supposed to supplant complete works upon obstetrics, but can be used by students during their obstetrical course with much advantage. It is a pity that the woodcuts are as poor as the photoengravings are good.

DISEASES OF THE EYE. By M. Stephen Mayon, F.R.C.S. London. Henry Frowde, and Hodder & Stoughton, London, 1908.

With the appearance of this work, another volume has been added to the list of the Oxford medical manuals. It is an attractive volume containing 119 original illustrations, and 15 plates which include 8 figures in colors. The author in the presentation of this work has endeavored to place at the disposal of students and practitioners a practical manual. For the undergraduate the volume is an admirable one, and we feel

confident that it will be greeted with the most hearty approval by both teacher and student. In arrangement it follows that usually adopted by the larger works. The various subjects are treated in a short, concise, practical manner, and are free from the numerous unsettled theories so often confusing to the average student. While the work is so well adapted to the wants of the student, it is not, in our opinion, comprehensive enough to fulfil the requirements of the general practitioner. The author has included an appendix containing a list of the formulæ most frequently employed in the various ocular affections. It is rather unfortunate that the reference made to the ophtho-tuberculin test was not concluded with a word of caution. The cuts are well selected and executed, while the paper and print are excellent. As a manual for undergraduate study the work deserves the highest commendation.

J. B. H.

A GUIDE TO THE CLINICAL EXAMINATION AND TREATMENT OF SICK CHILDREN. By John Thomson, M.D. Second Edition, Illustrated. William Green & Sons, Edinburgh and London, 1908. Price 12s. 6d.

In rewriting the second edition of his book, which is twice the size of the first, the author has endeavored to bring it abreast of the times, and to present not only his own views in regard to the etiology, diagnosis, and treatment of the diseases of childhood, but also to present the views which are commonly held by other leading pediatricists. We turn with particular interest to what Dr. Thomson has to say in regard to hydrotherapy in the treatment of diseases of children because, on the one hand, it is pretty generally recognized that children do not do well when subjected to the tub bath, and, on the other, the hydrotherapeutic measures of a different nature are probably not used as generally as they should be in this class of cases. With the statement that the wet pack (in which the patient is first wrapped in a cold sheet and then with a blanket) is useful in all general feverish conditions we cannot agree, since such a pack usually fails to produce the reaction which is so desirable, and is

speedily changed from a cold to a hot pack by the heat of the patient's body. We much prefer the process of cold or tepid sponging, to which Dr. Thomson also refers in terms of praise. Again, we question whether the use of a graduated bath in which the patient is immersed in water at 100° which is then gradually cooled to 75° in the course of from five to fifteen minutes is good advice. We believe that it is much better to use colder water in the beginning, since here, again, a reaction is desirable, and the mere abstraction of heat is not the main thing to be sought for. The employment of the cold douche in cases of rickets and other instances of poor nutrition if the child is strong enough to react is, we believe, good therapeutics, provided Dr. Thomson's advice is followed that the child should stand in a little hot water at the time that the cold is applied. An excellent appendix closes the book, in which directions as to methods of technique and treatment are given which materially increase its value.

A REFERENCE HANDBOOK FOR NURSES. By Amanda K. Beck. Second Edition, Revised. W. B. Saunders Co., Philadelphia, 1908. Price \$1.25.

This is a small book with a flexible cover, small enough to be carried in a man's jacket pocket, and its design is well described in its title. It opens with a dose table and tables of weights and measures, and then follow exceedingly brief descriptions of the action and doses of most of the important drugs, all of which is included in 17 pages. After this poisons and antidotes are discussed, and then formulæ are given for the use of nutrient enemata, poultices, stupes, etc. Directions are given as to the proper dressing in "operating-rooms," how to treat emergencies and how to give massage, and the proper food for the sick. There is also a chapter on obstetric nursing and some brief remarks as to human anatomy. Why the last three pages of this little book should be devoted to a consideration of the rates of postage with the different classifications of the post-office as to mail matter, including the subject of registration, special delivery, free delivery, and the fees for domestic money-orders, we cannot quite

understand. Would it not be as useful and more appropriate, even if equally unusual, to include the prices of underclothes, diapers, and green vegetables?

THE PHYSICIAN'S VISITING LIST FOR 1909. P. Blakiston's Son & Company, Philadelphia, 1908.

This Visiting List is now in the fifty-eighth year of its publication, and is published in five forms: For 25 patients per week; 50 patients per week; 75 per week and 100 per week; the last three being gotten out in two volumes, running from January to June and June to December. There is also a perpetual and a monthly edition. That for 25 patients per week costs \$1; for 50 patients per week \$1.25. The form which appears in two volumes costs \$2 for the 50 or 75 patient list, and \$2.25 for the 100 patients per week in two volumes.

CLINICAL DIAGNOSIS. A Text-book of Microscopy and Clinical Chemistry. By Joseph Phillips Emerson, A.B., M.D. The J. B. Lippincott Co., Philadelphia, 1908.

When the first edition of this book appeared about two years ago we referred to it as being an excellent addition to the literature of the department of medicine of which it treats. The present edition has been considerably improved, fully one-half of the book has been rewritten, and the number of pages has been increased. New illustrations have also been added. The book is emphatically what it professes to be, namely, one which deals with clinical microscopy and clinical chemistry in distinction from physical diagnosis, and for this purpose it can be commended to those who are in search of such a manual.

THE PRACTITIONER'S VISITING LIST FOR 1909. Lea & Febiger, Philadelphia, 1908.

This Visiting List is well known to many of our readers. It appears in such a form as to permit the registration of 30 patients per week; in the monthly undated form for 120 patients per month; perpetual for 30 patients weekly and for 60 patients. It contains a good deal of useful information in its first pages, and costs \$1.25, or \$1.50 with a thumb index.

INDEX CATALOGUE OF THE LIBRARY OF THE SURGEON-GENERAL'S OFFICE OF THE UNITED STATES ARMY. Second Series. Volume XIII: Periodicity—Prussia. The Government Printing Office, Washington, 1908.

The Index Catalogue of the Library of the Surgeon-General's Office of the United States Army is so well known to every one who has to deal with the literature of modern medicine that a description of this volume is quite unnecessary. The present issue serves to emphasize the fact that the Library of the Surgeon-General's Office is one of the greatest if not the greatest collection of medical publications in the world. Medical men in Europe and America are under a great debt to the United States government, and the Medical Department of the Army in particular, because through the issue of this catalogue the medical literature of the world can be studied with comparative ease.

DIET IN INFANCY. By A. Dingwall-Fordyce, M.D., F.R.C.P. William Green & Sons, Edinburgh and London, 1908. Price 3s. 6d.

In this small octavo of 172 pages Dr. Dingwall-Fordyce endeavors to give a condensed and concise statement of the views which are generally held at the present time in regard to the feeding of infants, both at the breast and by the bottle. He gives numerous tables for the preparation of modified milk, and devotes a chapter to substitutes for human milk. There is also an appendix with rules and the laws concerning the distribution of milk, the sanitary control of animals from which milk is obtained, and of those who take care of these animals and draw the milk from them.

THE NATURAL HISTORY OF CANCER. With Special Reference to its Causation and Prevention. By W. Roger Williams. William Wood & Company, New York, 1908.

Williams in his preface states that "since the cure of cancer altogether transcends present experience, I have in this work specially endeavored to elucidate the causation and prevention of the disease rather than its cure. To this end I have devised and applied a new method of cancer research—which may be called synthetic—whereby I have shown that there are modes

of life, various habits, and so forth, which tend to prevent the incidence of cancer almost entirely in healthy stocks, and greatly to reduce its ravages, even among those hereditarily predisposed."

The first chapter is in the main devoted to definitions. Tumor is succinctly defined as follows: "A persistent mass of redundant new formation, not obviously due to any extrinsic cause, which grows independently of the body, with which it is structurally and functionally uncombined; so that, although it generally assumes a more or less circumscribed form, it is nevertheless distinct from any known anomaly."

The second chapter is devoted to geographical distribution and incidence. Williams holds it is clearly established that cancer is of most frequent occurrence in the well-to-do, highly nourished families of occidental Europe, where they now are, and for some time have been, exceptionally well nourished. In this chapter will be found summarized statistics covering practically the whole world. It is noted that in the course of organic evolution some types of disease have diminished and become extinct, whilst others have increased and become more prevalent. In comparatively recent times typhus fever, typhoid, leprosy, scurvy, plague, and dysentery have almost or quite disappeared, whilst smallpox and other zymotic diseases have greatly diminished, and phthisis and tuberculous affections are decidedly on the wane. On the other hand, the small group of maladies of which cancer is the chief have steadily increased, and this in spite of a steady diminution in the death-rate. Of the other members of this group, insanity, suicide, alcoholism, diabetes, and diseases of the circulatory system are the chief; while to these may be added premature births and congenital deformities. In all modern communities, where the occidental type of civilization prevails—of which the chief characteristics are industrialism and urbanization, with great increase and wide-spread diffusion of material prosperity—a similar tendency is noticeable, especially as regards cancer, the incidence of this malady having doubled in frequency in periods of from twenty to thirty years,

the annual increment of increase averaging from three to five per cent.

Moreover, the increasing cancer mortality for many years has affected males to a much greater extent than females. This is attributed by Williams to the fact that of late, as the result of hibernization, the conditions of life have come to resemble more closely those for women than heretofore. Cancer is now a more fatal disease for women than phthisis. Williams believes that no single factor is more potent in determining the outbreak of cancer in the predisposed than excessive feeding. Many indications point to the gluttonous consumption of proteids, especially meat, which is liable to be especially harmful. Among the well-to-do classes the meat consumption has been estimated to amount to from 180 to 330 pounds per head per year. In addition to these totals, large quantities of game, poultry, rabbits, etc., must be included, as well as a fish consumption of 75 pounds per head per year, 12 pounds of cheese, 14 gallons of milk, and 80 eggs a year.

In Ireland the cancer mortality is much lower than it is in England, the diet being one unduly deficient in proteids. Patients suffering from cancer have almost invariably led regular, sober, and industrious lives. Persons of drunken and dissolute habits are comparatively seldom affected. Large, well-nourished persons, who appear to be overflowing with vitality, are especially susceptible. Such types are indicative of hypernutrition.

There are chapters upon Topographical Distribution of Cancer, Cancer and Other Tumors in Animals, Tumors in Vegetable Organisms, the Genesis of Malignant Tumors, the Experimental Study of Cancer Genesis, Cancer and Tumor Growth in Relation to Growth in General, the Microbic Theory of Cancer. The influence of sex and of age is considered at length, together with etiological indications derived from the study of the life history of patients. There is a very extensive series of statistics dealing with the initial seats of tumor and their relative frequency. Morphology and Recurrence are considered at length. There is a final chapter upon Inflammation, Ulcera-

tion, Retrogression, and Spontaneous Cure, the author holding that the one common feature in cancer is the debilitated condition to which the patients are reduced, and that enfeebled vitality produces a condition in which the cells are attenuated to such an extent as to render active cell proliferation almost impossible.

ESTIMATION OF THE RENAL FUNCTION IN URINARY SURGERY. By J. W. Thomson Walker, M.B., C.M., F.R.C.S. Illustrated. Cassell & Co., Limited, New York, 1908.

This excellent book, based on a large experience and a thorough knowledge of recent methods of diagnosis, is devoted in the first part to an estimation of the total renal function, including under this general heading chapters upon the symptoms and Signs of Failure of the Renal Function, with cases illustrative of the various types and a most judicious summing up of the relative importance of various symptoms. Examination of the Urine, the Kidney as a Filter, Elimination of Certain Substances by the Kidneys, the Glandular Function of the Kidney, are subheadings which sufficiently indicate the subject-matter.

As to the phloridzin test Walker summarizes its value by the statement that diminished phloridzin glycosuria indicates a depressed renal function which is usually due to disease of the kidney. Diseased kidneys have, however, occasionally eliminated a normal quantity of sugar, though this has not occurred with sufficient frequency to vitiate the test.

An extremely interesting and instructive chapter is devoted to Methods of Diagnosis Depending upon Clinical Examination, Statistics, and Pathology. Watson states that statistics which have been compiled in regard to the bilateral existence of renal disorders may be used to aid in the diagnosis of the condition of the second kidney. He has collected from literature 95 cases of operation upon one kidney in which anuria and uremia commenced within a few days after operation and in which apparently no suspicion was entertained before embarking upon the operation that the second kidney was not healthy, or sufficiently healthy to maintain the renal function. As a result of

the study of these cases it is apparent that anuria and uremia following operations upon kidneys the seat of tuberculous or calculous disease, or a pyonephrosis, are most frequently caused by the development of the same disease in the second kidney. The sections devoted to Cystoscopic Examination of the Ureteral Openings and Catheterization of Ureters are truly admirable.

A final chapter is devoted to Fallacies in the Methods of Ascertaining the Functional Activity of the Kidneys. It is pointed out that in health there is but a partial activity of the kidneys, the renal function never being in full activity at any one time under ordinary conditions. It is also noted that a temporary reduction of function may be brought about by reflex or other influences, and it is further stated that it is impossible to judge before operation how far hypertrophy will compensate for the reduction of the kidney tissue.

This book can be heartily commended. Its particular value is incident to the power exhibited by the author of selecting from a vast mass of material the facts of major importance and in duly accentuating them. He gives to his reader the methods of examination and treatment which he himself has found of most practical value.

MEDICAL GYNECOLOGY. By Samuel Wyllis Bandler, M.D. Illustrated. W. B. Saunders Company, Philadelphia and London, 1908.

This book is essentially devoted to the consideration of methods of treatment and the results accruing therefrom, other than surgical. As is proper, the first chapter is devoted to history taking and methods of examination, including staining for the gonococcus, for the tuberculosis bacillus, and for the *Spirochæta pallida*. Instruments employed in medical treatment are described at length and fully illustrated; the method of atmocauterization, by which is meant the application of steam at a temperature of 100° C., being given special attention.

Pressure therapy, abdominal massage, the production of pelvic hyperemia and anemia, vaginal douches, the application of electricity, of baths, are all given due consideration.

Amenorrhea, Dysmenorrhea, Uterine Bleedings, Leucorrhea, Pruritus, Pain, Abnormalities of Urination, Associated Nervous Conditions in Gynecology, are headings which sufficiently indicate the subject-matter. The chapter on Constipation is particularly commendable, purgatives very properly playing a minor rôle.

A chapter is devoted to Gonorrhea in both Children and Adults. Inflammation, Inflammatory Affections, even Malignant Degenerations are included in this book.

There have been so many books on the Operative Treatment of Affections of the Genital and Urinary Organs in the Female, with such casual references to medical treatment, that by many it is supposed to be non-existent. The accentuation of the fact that there are treatments other than operative, which in some cases are radically curative, is therefore timely. All that is best in such treatment will be found thoroughly discussed in Bandler's work.

GENITO-URINARY DISEASES AND SYPHILIS. By Edgar G. Ballenger, M.D. Illustrated. E. W. Allen & Co., Atlanta, Ga.

This book, which represents an excellent condensation of the accepted teaching on genito-urinary and venereal diseases, deals with gonorrhea and its complications, surgical affections of the prostate, and diseases of the genital tract, the bladder, and the kidneys. There are further chapters upon chancroid and syphilis. Special attention has been devoted to symptomatology, and excellent descriptions of treatment will be found. The book will be found a safe guide for the student and general practitioner. Even the specialist can profitably read this book, since it represents a careful study of an extensive clinical material.

A TEXT-BOOK OF OPERATIVE SURGERY. By Warren S. Bickham. Third Edition. Illustrated. W. B. Saunders Co., Philadelphia, 1905.

The favorable impression made by the first edition of Bickham's Operative Surgery published in 1903 is materially evidenced by the continued call for new editions, this last one embodying many new illustrations, alterations in the text, and

description of such operations as have recently received the indorsement of those most experienced in surgery. The anatomical discussions are particularly to be commended since they are wisely chosen with a view to the need of the operating surgeon. The first section is devoted to Operations upon the Blood-vessels, the Lymphatics, the Nervous System, Bones, Joints, Muscles, Tendons, Ligaments and Bursæ, with a chapter upon Amputations and Disarticulations. These chapters follow closely the usual lines.

The second section is devoted to Operations of Special Surgery, the surgical procedures being regionally classified.

The book closes with a chapter on Oper-

ations for Hernia. The choice of operation for any pathological condition is usually a wise one—*i.e.*, that which would be approved by the majority of operating surgeons. The method of procedure adopted is so clearly described and usually so well illustrated that it is easily comprehended. There are doubtless some procedures detailed which have an academic interest rather than a distinctly practical one, such, for instance, as the end-to-end enterostomy with a holder. Nor are the clips used for occluding the intestine above and below such as are commonly employed in clinics. These are, however, minor matters and detract not at all from the value of a most useful book.

CORRESPONDENCE.

LONDON LETTER.

BY J. CHARLTON BRISCOE, M.D.

The autumn session, the beginning of the medical year, is now in full swing, and the new students, for whom "Boyhood's a dream of the past for me," are getting acclimated to their new surroundings. It is a great change for the young man, throwing off the shackles of school life and becoming his own master. Left to his own devices the student in his first year, as a general rule, does not work particularly hard, but spends a considerable time in learning to smoke and in attending theaters, thus gaining a certain amount of useful experience. The town-bred boy has possibly passed through this stage during the school holiday times, but they are novelties to his country cousin. London as a medical school differs from the older universities of Oxford and Cambridge, in that the undergraduates of necessity are not so much under the control of the authorities. It is quite exceptional in London to see a young man in cap and gown, and if one should be seen probably he is a member of some faculty other than the medical, whereas in the older universities cap and gown are the rule during cer-

tain hours of the day and evening. This absence of academic dress confers the greatest possible freedom on the student after college hours. He has also to learn the pleasures of living "in digs," and his experiences of landladies and fellow-lodgers are varied and instructive. The London landlady is not so bad as she has been painted, and although there are some distinctly unpleasant persons among them, the average is much above the type depicted in the time of Bob Sawyer. Many have been domestic servants or people who have descended in the social scale, and having settled down to housekeeping, make their lodgers very comfortable, and in some cases even take a motherly interest in their welfare and success. Happy is the man who happens to light on an experienced cook. There is one vice which is common to all—logorrhea—and it is the hardest thing in the world to get the landlady out of the room in a reasonable time, without being actually rude. No doubt the student who lives at home is the best off as regards his material comforts, but home-life is not conducive to work, or compatible with the more intimate friendships which are formed among fellow resident collegiates. It is a matter for regret that, in London, there is

not sufficient college accommodation to house all the students.

There is always a considerable degree of rivalry between the various London medical schools, of which there are four large and six smaller ones, and especially is this so as regards the relative entries of new students. The examinations for scholarships and exhibitions are held by common consent late in September or quite early in October, and the days are so arranged that the examinations are held simultaneously. Formerly a competitor might go round the different schools trying his luck, and in some cases one man might obtain awards at several schools and would then accept the most valuable. This state of affairs was obviously very undesirable and delayed the announcement of success or otherwise to the candidates; and it was to meet this difficulty that the above mentioned arrangement was made. It rather spoils the young man's last school summer holiday to have to spend several hours a day reading, or as he would call it, "swotting for an exam.," especially as he has probably had to work harder than usual in the last term in order to pass some of the higher educational examinations.

The athletic side of the young medico is not neglected in London, and not long after the commencement of the winter session the captains of the football teams will be looking out for likely recruits, and the new man will be asked to play in a trial game or to take the place of an absentee. Mr. A. N. Other, whose name so frequently figures in the list of a team, is the common pseudonym adopted by some sporting student who happens to be afflicted with stern and unreasonable or nervous parents, and who has been forbidden to play, or who ought to have been at a lecture and has determined to "cut" it. During the first three years the athletic man can get a game twice a week, on Wednesdays and Saturdays, and matches are arranged against various teams. Of these, the fixtures most sought after are those against the Asylums on the Asylum ground. The game is always keen, for the attendants are frequently selected for prowess in some special department, be it music or sports, an

excellent repast is provided as well as the luxury of an after-football hot bath, and somehow or other it usually happens that the chief medical officer is himself a keen sportsman and takes infinite trouble to see that his guests have a good time. What matter if the return journey is somewhat lively! At the end of the third year, when regular hospital work has replaced college lectures and demonstrations, the surgical dresser or the physicians' clerk is unable to get away, except on very special occasions, such as an inter-hospital cup tie, unless he is able to persuade some one else to do his work. On this account Saturday afternoon appointments are not particularly sought after. Athletics take a prominent position in student life.

At each medical school the autumn session is the occasion for the reading of an inaugural address, followed by the distribution of prizes obtained in the preceding year. One of the senior members of the profession or some other person of note in the educational world delivers the address and presents the prizes, and in the evening is the principal guest at the Old Students' dinner. This is also an *exhibition*, and is attended by former students far and near. For many it is an occasion on which London is revisited and affords an opportunity for renewing old friendships and for retailing old news. Speeches are usually few in number and characterized by brevity. Unless the speaker is possessed of a penetrating voice, he is not likely to be heard, for by general consent the evening is given up to conversation.

October 31st saw the close of the Franco-British Exhibition. It has undoubtedly been a great success, and everywhere in London groups of French people were to be met, especially during the months of August and September. The Tube railways have been crowded with them, and it is almost a standing joke that there are more French than English direction placards posted in the subways. Apparently most of these visitors do not stay more than twelve hours, spend most of that time at the Exhibition, and do not benefit the large shop-keeping class at

all. There was only some slight attempt at a disturbance on the last evening, which as usual was attributed to the medical student, but this accusation was refuted by Mr. Sydney Holland, the chairman of the London Hospital, in a letter to some of the daily papers.

A short time ago some letters appeared in one of the lay papers decrying the statues which have been placed on the new buildings of the British Medical Association. The offices of the association, which are situated in the Strand at the corner of Agar Street, not far from Charing Cross Station, have been rebuilt in a light gray stone, and on the level of the second story some eight or ten statues, in half relief, have been placed. They are meant to represent various phases of the medical art, and are mostly nude or semi-nude figures. It is these which have excited the comments of some of the writers. The figures are well done and are by a well-known artist, though on account, perhaps, of the height at which they are placed it is somewhat difficult to recognize the precise meaning. They are, however, not obtrusive, and the agitation has died down, and there is no sign of any preparation for their removal, so we must conclude that they will remain with us.

We have to regret the loss of a distinguished medical man in the person of Mr. Treves. The prosperity of Margate, mainly owing to its reputation for the successful treatment of early tuberculous lesions, was largely due to him. During the latter part of his career Mr. Treves chiefly confined himself to the practice of surgery, and had a great reputation for success in such conditions as tuberculous glands and bone disease. The London Hospital has also felt the loss of one of our most promising young surgeons, Mr. Harold Barnard, who died early in August. He was a most energetic surgeon, a keen sportsman, and was getting well known through his excellent scientific writings. He was, conjointly with Dr. Leonard Hill, the inventor of the well-known instrument for estimating blood-pressure.

A PRESCRIPTION FOR TAPEWORM.

To the Editor of the THERAPEUTIC GAZETTE.

SIR: An article entitled "The Treatment of Tapeworm," in your issue of November 15, induces me to ask you to publish the following formula, which I have used with very good results for almost twenty years:

℞ Semen. pepon, ʒij;
Cort. granati, ʒss;
Oleores. aspidii, ʒj;
Oleii tigllii, gtts. iij;
Pulv. ergotæ, ʒss;
Sodii salicyl., gr. xv;
Pulv. acaciæ, ʒij;
Sacch. alba, ʒj;
Aquæ dest., ʒxij.

M. ft. emulsio. S.: One-half at once; the other half in two hours.

The pumpkin seed should be peeled and the pulp used.

I do not claim any originality for the combination, neither do I know the origin of the formula. I do know it has always expelled the entire worm in my experience. No preparatory treatment has been necessary as far as my experience goes; simply give it on an empty stomach in the morning. I always have the patient shake the mixture well, pour out a little more than one-half in a glass, and drink it down about 6 or 7 A.M. In about one hour or one and a half hours I make my call and administer the second dose, as it takes a little persuasion from the doctor to get a second dose down. Then have a suitable vessel ready with warm water in it, and await results. The patient will soon expel the worm.

I have administered this mixture so often and with such uniform good results that I feel the profession should give it a more extended trial. It is nauseating, especially after the second dose, and the patient may vomit some of it, but he should be urged to lie still and keep it down. I have never in my experience had to repeat this remedy a second time. I ask you to publish it, hoping it will serve others as well as it has me. No untoward results have ever followed its use in my hands, even when administered to debilitated persons, though in very feeble patients I have given less of the croton oil.

Yours truly,

EDMUND SHIELDS, M.D.

CINCINNATI, O.

INDEX TO VOLUME XXIV, THIRD SERIES.

(WHOLE SERIES, VOLUME XXXII.)

Abdominal binder in the treatment of per-				Alkalies in the treatment of rheumatism in	
tussis	615,	760		children	231
contusion a cause of mesenteric rupture.		900		Amebic dysentery and hepatitis, ipecac in the	
hernia, considered incurable, cured by fil-				treatment of	801
gree implantation	436			ipecacuanha in	329
incision, the	663			the treatment of	563
organs and uterus, supports of the.....	664			American mineral waters in the light of re-	
posture in operations on the pleura and				cent analyses	566
lungs	754			Amyl nitrite in the treatment of hemoptysis.	797
radical operation in suppurative disease				Analgesia versus anesthesia in obstetrics....	711
of the uterine adnexa	444			Analgesic, scopolamine as an	582
wound, a new method of closing the after				Analysis of psychotherapeutic methods.....	305
the "gridiron" operation	767			Analytical study of six hundred cases of an-	
Abortion, artificial—indications for in the				esthesia	738
first three months of pregnancy	644			Anaphylaxis, further studies upon.....	803
Abscess and gangrene of the lung, operation				serum disease as a clinical manifesta-	
for	663			tion of	722
of the liver, the treatment of.....	266			Anemia	52
tropical—the prevention of by				in Porto Rico, uncinariasis the cause of.	243
the treatment of the presup-				pernicious, and allied conditions.....	189
purative stage of amebic he-				the treatment of	50
patitis	801			Anemias, treatment of the	43
of the pelvis, the treatment of.....	246			Anesthesia, a symposium upon	864
Abscesses of the pancreas, circumscribed—				an analytical study of.....	788
draining of	208			lumbar	187, 371
Absorption of ointments	657			peril in American hospitals	89
Acetone in the treatment of inoperable car-				spinal	363
cinoma of the uterus	660			stovaine—changes in the nervous system	
Acetone in the treatment of inoperable car-				after	874
cinoma of the uterus, the value of.....	460			Anesthetics for the ruptured and crippled....	869
Acetozone in typhoid fever	49			selection of in operations on the thyroid.	418
Acetyl-salicylic acid (aspirin), the local use				the relation of feeding to the use of....	475
of in the treatment of follicular tonsillitis.	761			Anesthetist, status of the.....	546
Acne vulgaris, the treatment of.....	80			Aneurism of the aorta, the wiring operation	
Acquired diverticula of the sigmoid flexure..	482			in the treatment of.....	254
Acute and chronic infections treated by				Angina pectoris	265
Wright's vaccine method	451			a therapeutic note in regard to....	410
diverticulitis of the sigmoid with intra-				Angioma, racemose arterial—the treatment of	666
abdominal abscesses	128			Angulation of the sigmoid.....	679
general peritonitis, the continuous admin-				Another method of preventing postanesthetic	
istration of fluids by the rectum in the				vomiting	779
treatment of	51			Antepartum and postpartum hemorrhage....	790
illness, the necessity of rest after an....	178			Anthrax, fifteen cases of treated in the Phila-	
infections, treatment of by sodium nu-				delphia Municipal Hospital	6
cleinate	774			Antigonococcic serum, clinical observations on	733
intestinal obstruction, the principles under-				in the treatment of gono-	
lying the treatment of	895			coccic arthritis	250
pneumonia, the treatment of.....	564			Antimeningitis serum in the treatment of epi-	
stage of poliomyelitis, treatment of the.	274			demic meningitis	803
Adaptability of the donor's blood to the re-				Antimicrobic action of bromine	489
ceiver's blood in transfusion, test to de-				treatment of tuberculosis	797
termine the	457			Antipyrin injections in the treatment of per-	
Adenoid patients, postoperative treatment of.	647			tussis	650
Adenoids and adenoid tuberculosis.....	219			Antiseptic preparation, a new meritorious ex-	
and tonsils, painless removal of.....	435			ternal	415
in infancy	201			Antiseptics, intestinal—the actual value of..	625
Adrenal gland, primary tumors of the in				Anuria, treatment of	865
children	758			Aortic aneurism, the wiring operation in the	
Adrenalin and its mechanism, permanent in-				treatment of	254
crease of blood-pressure from	499			incompetence of later life, treatment of	
chloride, indications for the employment				the	504
of in conjunction with cocaine, in oper-				Apomorphine hydrochloride, the therapeutic	
ations on the eye	41			value of	115
in the treatment of eczema.....	729			in acute alcoholism	110
of osteomalacia	152			Apparently drowned, methods of resuscitat-	
the use of in controlling asthmatic at-				ing the	353
tacks	42			Appendicitis complicating puerperium	219
the uses of in ophthalmic surgery.....	492			summary of a thousand cases of.....	288
Advisability of operation for recurrence of				Appleman, Leighton F.: The Status of the	
hernia in the services	590			Ophthalmic-reaction to Tuberculin.....	613
After-results of prostatectomy, the cure of the	781			Argyrol in the treatment of trachoma.....	23
Albuminuria, the treatment of.....	712			Arsenic and strychnine, a fatal prescription of	176
Alcohol as a therapeutic agent.....	706			in cutaneous epithelioma	126
deep injections of in the treatment of				in the treatment of chorea.....	432
trifacial neuralgia	201			the abuse of in the treatment of dis-	
for increasing the bactericidal properties				eases of the skin and the deleterious	
of the blood serum	93			results that may occur from its inju-	
in relation to medicine	274			dicious employment	403
in the treatment of pneumonia.....	578			Arterial angioma, racemose—the treatment of	666
in children.....	873			tension, high—the therapy of.....	257
the abuse of in the treatment of chil-				Arteriectomy for thrombosis and embolism...	206
dren's diseases	802			Arteriovenous aneurism, traumatic, of the	
the influence of	870			cerebral portion of the carotid artery with	
Alcoholism, acute—apomorphine in	110			pulsating exophthalmos	660

- Arthritis, gonococcus—treatment of..... 754
 gonorrheal, of the large joints treated by
 passive hyperemia 759
 treated by vaccines 217
 of the hip-joint, deforming, and its re-
 lation to the Roser-Nélaton line..... 508
 of the knee, tuberculous—a case of ap-
 parently much aggravated by Bier's
 congestion 170
 rheumatoid 108, 730
 Artificial heat and sun rays, effects of..... 756
 respiration, Schafer's prone-pressure
 method of 548
 synovial fluid 889
 Art of gargling 272
 Ascarides in surgery 667
 Ascites due to hepatic cirrhosis, the operative
 treatment of 361
 Aspirin in the treatment of acute follicular
 disease 761
 Asthma and some other chest troubles, the
 treatment of, with reference to outdoor
 sleeping 731
 Athletics in the medical schools of London... 911
 Atonic dilatation of the stomach..... 880
 Atoxyl, a danger in the use of..... 270
 and its value in the treatment of syphilis
 the value of in sleeping sickness..... 837
 Atrophy, simultaneous, of several glands of
 the human body 152
 Aural complications of influenza..... 824
 Avulsion of the scalp, total..... 678
- Bacillary dysentery, a method employed in In-
 dia for the treatment of..... 284
 the treatment of..... 561
 Backward luxation of the shoulder..... 749
 Bacteria—are they absorbed from the peri-
 toneal cavity by the lymphatics or the
 blood-vessels? 179
 Bacterial cutaneous diseases 61
 destroying action of hyperemia..... 167
 infections of the genito-urinary tract in
 childhood 181
 injections in the treatment of diseases of
 the skin 443
 inoculation 876
 in the treatment of gonorrhea..... 588
 Bacteriological examination of the blood of
 the sinus in the differential diagnosis of
 otitic sinus-thrombosis 602
 Balsam of Peru in general surgery..... 357
 in the treatment of chronic
 bronchitis 575
 of scabies 739
 Banti's disease, splenectomy in..... 512
 Barium, a cause of the loco-weed disease.... 800
 Basal-cell carcinoma of the skin and mucous
 membranes, treatment of 594
 "Battersea's brown dog" 72, 149
 Beardsley, John Gillespie: The Toxic Effects
 of Urotropin 19
 Beebe, S. P.: Some Relations of the Thyroid
 Gland 843
 Benedict, A. L.: Psychotherapy..... 609
 Benign diseases of the stomach and duode-
 num, late results after operations for..... 813
 Benzoic acid as a food preservative..... 868
 Betanaphthol in the treatment of uncinariasis
 24'
 Bier's congestion, a case of tuberculous arth-
 ritis of the knee apparently much ag-
 gravated by 170
 hyperemia in the treatment of 125
 method in the treat of 824
 method for the cure of 270
 in treatment of 322
 port of 53
 suction 296
 venous 645
 Bile and pancreas, the, the excretion of
 urotropin in 378
 Birth-rate of 275
 Bismuth subnitrate, the 275
 of followed 708
 Blackader, A. D.: On the and Con-
 tra-indications for the use of Digitalis..... 734
 Blackwater fever, some observations on..... 190, 796
 the treatment of 56
 Bladder excision—new method 286
 instrument, telephonic 513
 Blastomycosis, cutaneous 150
 Blepharitis, the rational treatment of..... 544
 Blindness caused by atoxyl 270
- Blood, coagulation time of the..... 218
 serums, fresh, in the treatment of hem-
 orrhagic conditions 126
 transfusion, direct—the technique of..... 205
 pressure in eclampsia as an indication for
 treatment 656
 permanent increase of from adrenalin
 and its mechanism 499
 Blood-pressure-lowering reflexes that arise
 from irritation of the inflamed pleura, ob-
 servations upon certain..... 355
 Bone development and regeneration, the role
 of the various elements in..... 129
 tumors, conservative operations on..... 672
 Boric acid in the treatment of burns and
 scalds 121
 "Bottle operation" method for the radical cure
 of hydrocele 438
 Brachial palsy, nerve suture for..... 35
 Brain abscess, otitic..... 367
 Brav, Aaron: The Rational Treatment of
 Blepharitis 544
 Breakfast foods 46
 Breast, carcinoma of the..... 132
 Breech presentation, treatment of..... 670
 Bremerman, L. W.: Iodabin—An Organic
 Iodine as a Therapeutic Agent 162
 Bright's disease, chloride deprivation in the
 treatment of 199
 limiting the amount of liquids in 303
 the use of diuretics in..... 476
 Bromine, the antimicrobial action of..... 489
 Bromopnea, the treatment of..... 496
 Bronchitis, chronic 575
 Brooks, Macy: Hyperemia Treatment of Acute
 and Chronic Surgical Affections..... 172
 "Brown dog" of Battersea 72, 149
 Bubonic plague at Oran and at Tunis..... 74
 Bulkley, L. Duncan: Pathology in its Prac-
 tical Bearings upon the Treatment of Cer-
 tain Diseases of the Skin..... 390
 Bulletin of the American Pharmaceutical As-
 sociation and legitimate pharmacy..... 379
 Burns and scalds, treatment of..... 130
 treated with picric acid..... 706
 Bursitis, subdeltoid—the operative treatment
 of 211
 Buttermilk feeding 40
- Cactus grandiflorus as a cardiac remedy..... 763
 Caesarian section following ventrosuspension
 of the uterus, two cases of..... 538
 Cain, M. G.: The Gualacol Treatment of
 Pneumonia 4
 Calcium chloride in blood coagulation..... 95
 in the treatment of hemoglobin-
 uric fever, a preliminary report
 on 86
 Calmette's ophthalmic reaction in the diag-
 nosis of tuber-
 culosis 261
 to tuberculin 408
 ophthalmo-reaction, some experiences of..... 351
 Calomel in the treatment of anemia..... 52
 of dysentery 562
 Camphoric acid: its action and uses..... 738
 Cancer, excision of the rectum for..... 818
 of the colon 898
 operative treatment of..... 812
 of the sigmoid flexure and rectum, the
 surgical treatment of 746
 of the thyroid gland 36
 the cure of 557
 the "lightning" treatment of..... 810
 treated by thymus gland 128
 Cannabis Americana (Cannabis Sativa), a
 pharmacological study of 26
 Carbolic acid in the treatment of eczema.... 729
 Carbuncle, how to treat a..... 578
 Carcinoma and sarcoma of the appendix..... 816
 basal-cell, of the skin and mucous mem-
 branes, treatment of 594
 mammary, and the duration of the re-
 sults of operative treatment..... 292
 of the breast 132
 late recurrence of metastasis in
 of the uterus, inoperable—the value of
 acetone in the
 treatment of..... 460
 treated with acetone 660
 operation for removal of entire rectum
 and neighboring parts in..... 135
 primary, of the vermiform appendix..... 757
 Carcinomatous degeneration, the relation of
 intestinal polyposis to 131

- Cardiac disease, remedial measures other than drugs in 621
 failure in pneumonia 485
 remedy, cactus grandiflorus as a 763
 Cardiovascular disease, the therapeutics of 568
 Cassidy, Paul B.: Report of Twelve Cases of Pertussis Treated with the Abdominal Binder 615
 Castor oil in the treatment of mucous colitis 194
 Catgut treated with silver iodide 211
 Caustic potash in the treatment of pruritus 659
 Cecal tuberculosis 369
 hyperplastic 436
 Celluloid plates in the correction of certain forms of saddle-nose 205
 Cephalohydrocele in injuries of the head in young children 412
 Cerebral manifestations of lead poisoning 32
 Cerebrospinal meningitis, epidemic—serum treatment of 330, 572
 syphilis, diagnosis and treatment of 539
 Cervical spondylitis, the treatment of 900
 Changes in the nervous system after stovaline anesthesia 874
 in the stomach as a result of thrombosis and embolism in the portal area 590
 Chemistry of saliva in relation to hay-fever 115
 Chlabinas, treatment of 125, 196
 Childbirth, retroversion of the uterus after—the prevention of, by operation and other methods 837
 Children's diseases, the abuse of alcohol in the treatment of 802
 Chlorotone 792
 in the treatment of chorea 680
 Chloride of sodium in the treatment of gout, deprivation in the treatment of Bright's disease 199
 Chloroform and scopolamine-morphine anesthesia 884
 poisoning, delayed 558
 Cholecystotomy and cholecystectomy as practiced in the clinic of Mr. Moynihan 598
 Cholera and choleraic diarrhea, hypodermoclysis and transfusion in the treatment of 552
 quinine in 726
 the treatment of by saline injections 805
 Chorea, and a convenient and trustworthy method of exhibiting arsenic therein, of aggravated type with certain unusual phenomena 571
 the treatment of 629
 Chronic bronchitis 575
 constipation, the treatment of 617
 obstruction of the duodenum at the root of the mesentery 679
 Chrysarobin in the treatment of psoriasis 425
 Cirrhosis, hepatic, the cause of ascites—operative treatment 361
 Cleft palate, a new method of dealing with 287
 Cleidocranial dysostosis, a case of 72
 Clinical and pathological differential diagnosis of diseases of the female breast in its relation to treatment 262
 experience, some researches that aid and support 93
 observations on antigenococcic serum 733
 significance of McBurney's point 180
 Coagulation time of the blood 218
 Cocaine and adrenalin chloride in operations on the eye 41
 Cocainization in the extraction of teeth 39
 Cocillana 804
 Colitis, mucomembranous—the treatment of 122
 mucous 193
 —the treatment of 794
 Collapse in malignant ague, notes on the causes and treatment of 185
 Collargol in meningitis 75
 Combretum sundiacum (jungle plant), notes on the 717
 Complicated fractures due to the crushing of a limb, the treatment of 304
 Composition of large curds in infants' stools 788
 Compression of the pelvis in operation for exstrophy of the bladder 759
 Congenital stenosis of the pylorus in the adult 896
 Conquest of the venereal diseases 626
 Conservative operations on bone tumors, based on the clinical and pathological study of their relative degree of malignancy 672
 Constipation, chronic—the treatment of 617
 psychotherapy for the treatment of 623
 Constriction of the neck for the prevention of postanesthetic vomiting 779
 Contracted scars treated with fibrolysin 737
 pelvis, induction of labor in 62
 Correction of certain forms of saddle-nose 205
 Coryza, paroxysmal, and hay-fever, intractable, the treatment of by resection of the nasal nerve 817
 Costal cartilage resection because of persistent pain 590
 Cough, its management without drugs 494
 Coxitis tuberculosa, the treatment in 669
 Creeping as a treatment for scoliosis 460
 Creosote and iodine in the treatment of tubercular osteitis of the tibia 76
 in the treatment of tuberculosis 321, 434
 Crippled and ruptured, anesthetics for the 869
 Cryptorchidism, the treatment of 675
 Cure for the opium habit, a reputed 183
 Curettage in puerperal sepsis 584
 Curtin, Roland G.: Cactus Grandiflorus as a Cardiac Remedy 763
 Cutaneous blastomycosis 513
 diagnosis of surgical tuberculosis 760
 diseases, bacterial 61
 epithelioma, arsenic in 126
 reaction to tuberculin in children 726
 tuberculin reaction 649
 vaccination in the diagnosis of tuberculosis 500
 Cystic mastitis, chronic 595
 Cystopyelitis in children 440
 Cystoscopy in the diagnosis of diseases of the kidney 84
 Danger in the use of atoxyl 270
 in the use of widely separated doses of diphtheria antitoxin 410
 Davis, Edward P.: The Prevention, by Operation and Other Methods, of Retroversion of the Uterus after Childbirth 837
 The Treatment of Eclampsia in the Patient's Home 1
 Deaderick, William H.: A Preliminary Report on Calcium Chloride in the Treatment of Hemoglobinuric Fever 86
 Dead streptococci, prophylactic injections of in scarlet fever 789
 Deaths from gastric and duodenal ulcer after operations for other conditions 584
 under anesthetics in the London hospitals 454
 Decompressive operations for the relief of pressure symptoms complicating fractures of the base of the skull 480
 Deforming arthritis of the hip-joint, and its relation to the Roser-Nélaton line 508
 Delayed chloroform poisoning 558
 Depression and shock of the vasomotor center, the relation between 102
 Derangement of the knee-joint, with especial reference to injuries of the semilunar cartilages 212
 Dercum, F. X.: An Analysis of Psychotherapeutic Methods 305
 Diagnosis and therapeutics, hold fast to that which is good in 703
 and treatment 100
 of cerebrospinal syphilis 539
 of infantile scurvy 81
 of pericarditis, remarks on the 267
 of tubercular disease 261
 Diaphoresis in the treatment of internal ocular affections 798
 Diaphragmatic hernia, chronic 668
 Diarrhea, infantile—red wine injections in 568
 summer, in children—treatment of 646
 treated with liquor hydrargyri perchloridi 879
 Difficulties and dangers attending the use of the metric system in prescribing 542
 Diffuse peritonitis in women 784
 Digestive apparatus, a new method of testing the functions of the 18
 Digitalin versus preparations of digitalis leaves 550
 Digitalis in the treatment of aortic incompetence 504
 in valvular disease of the heart 38
 the indications and contraindications for the use of 708
 the use and abuse of 719
 Dilatation of the stomach, atonic 880
 postoperative 63
 Diphtheria antitoxin, danger in the use of widely separated doses of 410
 refined and concentrated by Gibson's method, results obtained from the use of 571
 the leucocytes in before and after administration of antitoxin 874

- Direct transfusion of blood, the technique of. 205
- Disassociation of nerve fibers. 366
- Disease and deformity due to scar tissue, the treatment of. 679
- Diseased tonsils: an important factor in preventive therapeutics. 862
- Diseases of children, alcohol in the. 802
- of the skin, bacterial injections in the treatment of. 443
- certain—pathology in its practical bearings upon the treatment of. 390
- the abuse of arsenic in the treatment of and the deleterious results that may occur from its injudicious employment. 403
- the general treatment of. 344
- treatment of the more common. 569
- Disinfection by iodine-benzine. 54
- Dislocation fractures of the os navicularis pedis and their results. 506
- Displacement of the internal semilunar cartilage of the knee-joint. 297
- Dissolving action of hyperemia. 169
- Diuretics in Bright's disease, the use of. 476
- Diverticula of the sigmoid flexure, acquired. 482
- Diverticulitis, acute, of the sigmoid with intra-abdominal abscesses. 128
- Diverticulum of the esophagus, radical operation for. 659
- Draining circumscribed abscesses of the pancreas. 208
- Drop method of administering ether. 177
- Drugs and nihilism. 350
- in the modern treatment of tuberculosis. 433
- Duodenal obstruction, chronic, at the root of the mesentery. 679
- ulcer, acute perforating—observations on six cases of. 449
- diagnosis and treatment of. 366
- Dysentery, amebic—*Ipecacuanha* in. 329
- the treatment of. 563
- and hepatitis, *Ipecac* in. 336
- bacillary—the treatment of. 561
- Ipecacuanha* in. 489
- the treatment of. 283
- Dysmenorrhea, primary. 49
- Ear disease in infancy and childhood. 672
- nose, and throat, peroxide of hydrogen in the diseases of the. 423
- Early recognition and treatment of rachitis, the importance of the. 495
- Eclampsia, the blood-pressure in as an indication for treatment. 656
- the treatment of in the patient's home. 1
- treated by veratrum and morphine. 340
- Eczema in infants and young children, the treatment of. 643
- of infants and young children, the treatment of by thyroid. 742
- the treatment of. 728, 887
- Edema, acute pulmonary. 342
- Effects of sun rays and artificial heat. 756
- Einhorn, Max: A New Method of Testing the Functions of the Digestive Apparatus. 18
- Electrotherapeutics in the treatment of writer's cramp. 491
- Ellis, B. K.: The Treatment of Chronic Constipation. 617
- Embolism and thrombosis, arteriotomy for. 206
- in the portal area, changes in the stomach as a result of. 590
- Empyema. 419
- Enlargement of the prostate, treatment of the. 316
- Enterostomy, surgical phases of. 675
- Enzymes of the human pancreatic and intestinal juice obtained through a jejunal fistula, a study of the. 692
- Epidemic infantile paralysis, the treatment of. 729
- Epilepsy treated with chloretone. 792
- Epiphysis of the femur, lower—traumatic separation of the. 293
- Epithelioma, cutaneous—arsenic in. 126
- of the penis: an analysis of 100 cases. 447
- the cure of by the Roentgen ray. 373
- Erysipelas, the local use of magnesium sulphate solution in the treatment of, with report of cases. 381
- the opsonic index in the injection treatment of. 364
- Esophageal diverticulum, radical operation for stricture, esophago-jejuno-gastrostomy for the relief of. 587
- Esophageal strictures, impermeable—test of the string-cutting method for. 440
- Esophago-jejuno-gastrostomy for the relief of esophageal stricture. 587
- Esophagoscopy. 825
- Ether narcosis followed by lung complications. 441
- the drop method of administering. 177
- Etiology and treatment of pruritus ani. 112
- Eucalyptol in the treatment of uncinariasis. 245
- Excision of the bladder—new method. 56
- of the rectum for cancer. 818
- of the scaphoid in the treatment of rigid flatfoot. 53
- Excretion of urotropin in the bile and pancreatic juice. 645
- Exophthalmic goitre, a case of—its treatment. 325
- radium in. 161
- the action of lecithin in. 877
- the operative treatment of. 676
- the x-ray treatment of. 791, 854
- Exophthalmos, pulsating—trauma in the causation of. 660
- Experimental contribution to early amputation in tetanus. 57
- study of the suture of blood-vessels and the implantation and transplantation of vessels and organs. 207
- Exstrophy of the bladder, compression of the pelvis in operation for. 759
- Extension bandage in the treatment of cervical spondylitis. 900
- External application of magnesium sulphate. 409
- Extract of the suprarenal gland, the action of the and the method and indications for its use. 42
- Eye operations, adrenalin chloride and cocaine in. 41
- the use of adrenalin in. 493
- Fatal intoxication that sometimes follows serotherapy, prevention of the. 883
- prescription of arsenic and strychnine. 176
- Fat-free milk in infant feeding, the use of. 643
- Favus, the treatment of. 804
- Feeding in typhoid fever. 777
- the relation of to the use of anesthetics. 475
- Female breast, diseases of the—clinical and pathological differential diagnosis of in its relation to treatment. 262
- Femoral hernia, the groin operation for. 671
- shaft, the operative treatment of recent fractures of the. 890
- Femur, traumatic separation of the lower epiphysis of the. 293
- treatment of fracture of the neck of the. 511
- Fetid breath ("bromopnea"). 496
- Fetterolf, George: The Local Use of Acetylsalicylic Acid (Aspirin) in the Treatment of Follicular Tonsillitis. 761
- Fever cases, the treatment of. 48
- Fibrolysin in the treatment of contracted scars. 737
- Fillgree implantation in the cure of abdominal hernia considered incurable. 436
- Fistula of the urachus. 57
- Flatfoot, rigid, treated by excision of the scaphoid. 53
- Fleas as a cause of the transmission of plague. 653
- Flexible collodion, antiseptic. 415
- Fluids, the continuous administration of by the rectum in the treatment of acute general peritonitis. 51
- Flushing the intestinal canal. 816
- Follicular tonsillitis, the local use of acetylsalicylic acid (aspirin) in the treatment of. 761
- Food preservative, benzoic acid as a. 868
- Foreign literature on the surgery of the prostate, résumé of some recent. 514
- Formaldehyde in the treatment of chilblains. 196
- Formol in the treatment of sweating feet. 670
- Foul breath, the treatment of. 640
- Fracture of the neck of the femur, treatment of. 511
- of the tuberosity of the tibia. 140
- the open treatment of recent. 105
- Fractures of the base of the skull, decompressive operations for the relief of pressure symptoms complicating. 480
- of the bones of the face. 79
- of the femoral shaft, the operative treatment of recent. 890
- Freedom of the city of London conferred on Florence Nightingale. 377
- Fresh air in the treatment of pneumonia. 155
- blood serums in the treatment of hemorrhagic conditions. 126

- Frost-bites, Bier's hyperemia in the treatment of 125
- Functions of the foot, relation between the and the height of the longitudinal arch... 286
- Funk, John: Test to Determine the Adaptability of the Donor's Blood to the Receiver's Blood in Transfusion 457
- Fussell, M. Howard: Treatment of Pneumonia 153
- Gall-stone disease, isochymia simulating... 893
- Gall-stones, recurrence of around a suture inserted at previous operation 811
- Gangrene and abscess of the lung, operation for 668
- in strangulated hernia, the treatment of 815
- Gangrenous intussusception in children, resection of the intestine in 750
- Gargling, the art of 272
- Gastric and duodenal hemorrhages 745
- ulcer, deaths from after operations for other conditions 584
- diseases, silver nitrate in 346
- neuroses, the treatment of the 340
- ulcer, medical vs. surgical treatment of perforating—the operative treatment of 677
- ten cases of perforation after 824
- the medical treatment of 357
- the treatment of 586, 718
- Gastroenterostomy, direction of the jejunum in the operation of 668
- Gastropostosis and its treatment 47
- Gelatin and salt-water injections for intestinal hemorrhage in typhoid 811
- General surgery, balsam of Peru in 357
- Genital development of an adult in a boy of four years 72
- Genito-urinary tract, bacterial infections of the in childhood 181
- Glands of Bartholin, inflammation of—treatment by Bier's hyperemia method 889
- Glove lubricant, antiseptic 415
- Goats, the use of 652
- Goltre, intraglandular enucleation for 592
- malignant—the surgical treatment of 855
- personal experiences in the surgery of simple types of 846
- Gonococcal arthritis, report of six cases of treated with antgonococcal serum 250
- Gonococcus arthritis, treatment of 754
- infection in women, the medical treatment of 232
- Gonorrhea, bacterial inoculation in the treatment of 588
- in the female, the operative treatment of 596
- Gonorrheal arthritis of the large joints, treatment of by means of passive hyperemia 759
- treated by vaccines 217
- rheumatism, vesiculotomy in the cure of 715
- Gordon, Alfred: Bier's Method in Treatment of Some Neuroses—Report of Twelve Cases 322
- Gout, acute—Bier's venous stasis in 296
- a review of some recent work on 505
- Grace, Ralph: The Treatment of Hay-fever 537
- Graduated manual labor in the treatment of phthisis 149
- Grafting the whole thickness of the skin... 365
- Graves's disease and its treatment 427
- "Gridiron" operation, a new method of closing the abdominal wound after the without using buried sutures, by means of two crossed sutures of silkworm-gut 767
- Griffith, J. P. Crozer: Treatment of Rheumatism in Children 229
- Groin operation for femoral hernia 671
- Gualacol and iodide of potassium in the treatment of rheumatoid arthritis 109
- treatment of pneumonia 4
- Gynecology, scopolamine-morphine anesthesia in 486
- Haefele, G. L.: The Medicinal Treatment of Pulmonary Tuberculosis 320
- Hair-ball in the stomach 531
- Hammond, Frank C.: Rupture of the Uterus, with a Report of Three Cases 840
- The Treatment of Pelvic Abscess 246
- Hand and toilet lotion 415
- Hare, H. A.: Hold Fast to that which is Good in Diagnosis and Therapeutics... 703
- Remedial Measures Other than Drugs in Cardiac Disease 621
- Some Researches that Aid and Support Clinical Experience 93
- Hare, H. A.: The Wiring Operation in the Treatment of Aneurism of the Aorta 254
- Hay-fever and paroxysmal coryza, intractable, the treatment of by resection of the nasal nerve 817
- chemistry of saliva in relation to 115
- the treatment of 537
- Headache, treatment of some of the severer forms of 868
- Head and face injuries 77
- injuries in young children, cephalohydrocele in 412
- Heart and pericardium, surgery of the 441
- complications of scarlet fever, prevention of 113
- disease, thoracostomy in 627, 720
- valvular 38
- failure in typhoid fever—its treatment... 485
- surgery under diminished air-pressure... 446
- Hematemesis, treatment of 727
- Hemoglobinuria or malaria, the relation of to quinine 477
- Hemoglobinuric fever, a preliminary report on calcium chloride in the treatment of... 86
- Hemoptysis, the treatment of 32
- of by amyl nitrite 797
- Hemorrhage, antepartum and postpartum... 790
- from the stomach and duodenum 745
- and intestine, postoperative 809
- intra-abdominal, due to tubal pregnancy, deferred operations for 823
- postpartum—the treatment of 127
- tonsillar—surgical treatment 372
- Hemorrhagic conditions, treatment of with fresh blood serums 126
- purpura, the use of oil of turpentine in... 654
- sarcoma, idiopathic multiple 587
- Hemorrhoids, with special reference to the treatment under local anesthesia 239
- Hepatic cirrhosis the cause of ascites—operative treatment 361
- Hepatitis and dysentery, ipecac in 836
- the use of ipecacuanha in 638
- Hernia, abdominal, considered incurable, cured by filigree implantation 436
- chronic diaphragmatic 668
- femoral—the groin operation for 671
- inguinal, in children 361
- internal—new variety of 55
- strangulated—the treatment of gangrene in 815
- the advisability of operation for recurrence of in the services 590
- Heterotopy of the spinal cord, traumatic... 509
- Hip-joint arthritis, deforming, and its relation to the Roser-Nélaton line 508
- disease, intra-articular injections in the treatment of 61
- Hoelscher, Julius H.: A Study of the Enzymes of the Human Pancreatic and Intestinal Juice Obtained through a Jejunal Fistula 692
- Hold fast to that which is good in diagnosis and therapeutics 703
- Hollister, John C.: The Relationship between Stauung-hyperemia and Opsonic Index 167
- Home treatment of early tuberculosis 46
- of eclampsia 1
- of pulmonary tuberculosis 634
- Horse serum, hypersusceptibility of man to... 883
- Hot irrigations in the treatment of venereal ulcers 811
- Houghton, E. M., and Hamilton, H. C.: A Pharmacological Study of Cannabis Americana (Cannabis Sativa) 26
- How are the individual phenomena of morphine craving to be combated? 886
- do you treat seasickness? 493
- to manage a cough without drugs 494
- to treat seasickness 658
- Human blood transfusion in sarcoma 557
- pancreatic and intestinal juice obtained through a jejunal fistula, a study of the enzymes of the 692
- Hydatid disease, the precipitin reaction in... 413
- Hydrocele, the "bottle operation" method for the radical cure of 438
- Hydrochloric acid as an aid to digestion... 97
- Hydrostatic method of measuring blood-pressure 456
- Hydrotherapy in the treatment of summer diarrhea in children 646
- Hyoscine hydrobromide in the treatment of status epilepticus 420
- Hyperemia, Bier's, in the treatment of inflammation of the glands of Bartholin... 889
- passive, in the treatment of gonorrheal arthritis of the large joints 759

- Hyperemia, the bacterial destroying action of 167
the dissolving action of..... 169
the nourishing action of..... 169
the resorptive action of..... 168
treatment of acute and chronic surgical
affections..... 172
Hypersusceptibility of man to horse serum.. 383
Hyperplastic tuberculosis of the cecum..... 436
Hypnosis, suggestion under..... 309
Hypnotic action of the valerianic acid group,
studies of the..... 498
Hypnotics..... 567
Hypodermic use of quinine..... 43
Hypodermoclysis and transfusion in the
treatment of cholera and choleraic diarrhea 552
- Ichthyol in the treatment of chilblains..... 196
Ideal ligature, the..... 211
Idiopathic multiple hemorrhagic sarcoma.... 587
Ileocecal tuberculosis, surgical forms of.... 58
Ileus of the jejunum, operation in two stages
for relief of..... 187
Immediate treatment demanded in certain of
the more serious ocular conditions..... 808
Immunization in the prophylaxis of surgical
infections..... 741
Important notice to subscribers..... 153
Incision of the abdomen..... 663
Indications and contraindications for the use
of digitalis..... 708
for artificial abortion in the first three
months of pregnancy..... 644
Induction of labor in contracted pelvis.... 62
Inebriety: its causation and control..... 123
Infantile adenoids..... 201
diarrhea, red wine injections in..... 568
mortality, annual conference on the sub-
ject of in London..... 377
paralysis, epidemic—the treatment of.... 729
the treatment of..... 370
Infantile pyloric stenosis..... 891
scurvy, the diagnosis and treatment of.. 31
Infant feeding, buttermilk in..... 40
the use of fat-free milk in..... 643
Infants and young children, the treatment of
eczema in..... 643
Infants' stools, composition of large curds in
infectious pyelonephritis, the treatment of.. 59
Inflamed pleura, observations upon certain
blood-pressure-lowering reflexes that arise
from irritation of the..... 355
Inflammation of the glands of Bartholin,
treatment of by Bier's hyperemia method.. 889
Inflammations of the throat, acute—the local
treatment of from the standpoint of path-
ology..... 776
Inflammatory stricture of the rectum, the
treatment of..... 593
Influence of alcohol..... 870
of pure oxygen upon wounds and infec-
tions..... 760
Influenza, aural complications of..... 824
Ingram, James H.: The Opium Habit in North
China..... 401
Inguinal hernia associated with undescended
testis, treatment of..... 893
in children..... 361
Injection therapy of neuralgia..... 635
Injuries of the ulnar nerve—treatment..... 54
to the head and face..... 77
Inoculations, bacterial..... 876
Inoperable carcinoma of the uterus, the value
of acetone
in the treat-
ment of..... 460
treated with
acetone..... 660
Internal hernia, new variety of..... 55
ocular affections, diaphoresis in the
treatment of..... 798
secretions of the ovaries and testicles in
relation to the secretions of certain
ductless glands..... 130
semilunar cartilage of the knee-joint, dis-
placement of the..... 297
use of the oil of turpentine..... 653
Interstitial pancreatitis, chronic—operative
treatment..... 55
Intestinal anastomosis without open incision
by means of basting stitches..... 742
antiseptics, the actual value of..... 625
canal, flushing the..... 816
flux, with mucus in the stools—treat-
ment..... 425
hemorrhage in typhoid, gelatin and salt-
water injections for..... 811
- Intestinal obstruction, acute—the principles
underlying the treatment of..... 895
polyposis and the relation of this condi-
tion to carcinomatous degeneration.... 131
rupture, traumatic..... 130
Intra-abdominal hemorrhage due to tubal
pregnancy, deferred operations for
torsion of the omentum without
hernia..... 439
Intra-articular injections in the treatment of
diseases of the hip-joint..... 61
Intractable hay-fever and paroxysmal coryza,
the treatment of by resection of the nasal
nerve..... 817
Intraglandular enucleation for goitre..... 592
Intraspinal injection and surgical anesthesia
injections of magnesium sulphate in the
treatment of tetanus..... 388
Intussusception, gangrenous, in children—re-
section of the intestine in..... 750
Iodabin—an organic iodine as a therapeutic
agent..... 162
Iodide of potassium in the treatment of blas-
tomycosis..... 514
Iodine and creosote in the treatment of tuber-
cular osteitis of the tibia..... 76
in the treatment of eczema..... 729
in treatment of ulcers..... 649
preparations in the treatment of cardio-
vascular disease..... 569
the surgical value of..... 490
treatment of puerperal sepsis..... 565
benzine disinfection..... 54
Ipecacuanha in amebic dysentery..... 329
in dysentery..... 489
in hepatitis..... 638
in the treatment of amebic dysentery... 663
Ipecac in dysentery and hepatitis..... 836
in the treatment of amebic dysentery and
hepatitis..... 801
Iron remedies, remarks on the use and mis-
use of..... 832
the use of in anemia..... 44
Irrigation of the colon in the treatment of
anemia..... 50
Ischemic paralysis..... 628
Volkmann's..... 891
Ischochymia simulating gall-stone disease... 893
Is the absorption of bacteria from the peri-
toneal cavity by the lymphatics or the
blood-vessels?..... 179
Itching, treatment of..... 118
- Jejunal fistula, a study of the enzymes of the
human pancreatic and intestinal juice
obtained through a..... 692
ileus, operation in two stages for relief
of..... 137
Jejunum, direction of the in the operation
of gastroenterostomy..... 668
Joint disease, chronic, treated with tubercu-
lin injections by Wright's method..... 373
Jugular bulb, primary otogenous thrombosis
of the..... 662
Jungle plant (*Combretum sundiacum*), notes
on the..... 717
- Kaple, Edward B.: A Case of Exophthalmic
Goitre—its Treatment..... 325
Karo, William: Treatment of the Enlarge-
ment of the Prostate..... 316
Kidney diseases, surgical—modern means of
diagnosis in..... 84
mobility..... 294
the treatment of..... 271
tuberculosis, nephroureterectomy for... 397
the treatment of by means of the
Roentgen rays..... 601
tumors and retroperitoneal growths.... 677
unduly mobile—making of a shelf below
the..... 284
Kidneys, surgery of the..... 56
Knee-joint, derangement of the—with especial
reference to injuries of the semi-
lunar cartilages..... 212
displacement of the internal semilu-
nar cartilage of the..... 297
luxation of the interarticular carti-
lages of the—permanence of the
results of operative treatment of... 212
traumatic laceration of the cartilages
of the..... 751
- Labor induction in contracted pelvis..... 62
scopolamine-morphine anesthesia in.... 98
Laceration of the cartilages of the knee-
joint, traumatic..... 751

- Lacerations, complete—perineorrhaphy for... 892
- Lactic acid as a remedy for certain conditions of the nasal passages, further observations on the 577
- Lainé, D. T.: Treatment of Acute Infections by Sodium Nucleinate 774
- Landis, H. R. M.: Untoward Effects Following the Use of Maragliano's Serum..... 768
- Laparotomy, laxatives after 214
- Later results after operations for benign diseases of the stomach and duodenum..... 818
- Later life, treatment of the aortic incompetence of 504
- Lathrop, Walter: Injuries to the Head and Face 77
- Laxatives after laparotomy 214
- Lead poisoning 714
- cerebral manifestations of..... 32
- Lecithin, the action of in exophthalmic goitre 877
- Legitimate pharmacy and the Bulletin of the American Pharmaceutical Association..... 879
- Leonard, Charles Lester: Palliative Treatment of Malignant Diseases by Means of the Roentgen Rays 471
- Leucocyte examination in suppurative conditions arising from middle-ear infection, value of the 585
- Leucocytes in diphtheria before and after administration of antitoxin 874
- Leucocytosis, diagnostic value of..... 691
- Leukemia, a new and more rational method of treatment of by the x-ray..... 639
- nature and treatment of..... 721
- the treatment of by means of the Roentgen rays 533
- treatment of with mixed toxins of Coley..... 523
- Lifting apparatus, a simple..... 443
- "Lightning" treatment of cancer..... 810
- Limitations of the newer tuberculin reactions 636
- Linitis, plastic 674
- Liquor hydrargyri perchloridi (B. P.) in the treatment of diarrhea 879
- Liver abscess, the treatment of..... 266
- Local analgesia, operations under..... 502
- anesthesia in the extraction of teeth..... 39
- the value of novocaine in..... 430
- Locomotor ataxia: its early recognition and general management 256
- Loco-weed disease, barium a cause of the... 800
- London letter 910
- 71, 149, 226, 377, 454, 531, 607, 683,
- Longitudinal arch, relation between the height of the and the functions of the foot 286
- Long, W. Hamilton: The Status of the Anesthetist 546
- Lumbar anesthesia 187, 871
- Lung abscess and gangrene, operation for..... 663
- complications following ether narcosis.. 441
- Lupus erythematosus 822
- Luxation of the interarticular cartilages of the knee-joint, the permanence of the results of operative treatment of..... 212
- of the metatarsophalangeal joint..... 710
- of the semilunar bone of the wrist..... 446
- of the shoulder, backward..... 749
- Magnesium sulphate, intraspinal injections of in the treatment of tetanus 888
- solution, the local use of in the treatment of erysipelas, with report of cases.. 381
- the use of as an external application 409
- Maier, F. Hurst: The Value of Acetone in the Treatment of Inoperable Carcinoma of the Uterus 460
- Making of a shelf below the unduly mobile kidney 284
- Male-fern in the treatment of tapeworm..... 806
- Malignant ague, collapse in—notes on the causes and treatment of..... 185
- disease of the prostate, the diagnosis and treatment of 678
- diseases, palliative treatment of by means of the Roentgen rays..... 471
- goitre, the surgical treatment of..... 855
- tumors of the interior of the nose..... 510
- Mammary carcinoma and the duration of the results of operative treatment..... 292
- Manometric table, a useful..... 273
- Manufacturing pharmacist and the commercial scientific laboratory—what we owe to them 228
- Maragliano's serum, untoward effects following the use of 768
- Martin, Edward: The Surgical Treatment of Malignant Goitre 855
- Mastitis, chronic cystic 595
- Mastoid and intracranial complications in chronic recurrent suppurative otitis media. 685
- Maynard, J. H.: Hemorrhoids, with Special Reference to the Treatment under Local Anesthesia 239
- Mayo operation for retroversion of the uterus 140
- McBurney's point, the clinical significance of 180
- McDonald, Ellice: The Medical Treatment of Gonococcus Infection in Women 232
- Medical aspects of pyelitis in pregnancy.... 878
- men and coroners of London, collision between 607
- schools of London, rivalry between the.. 911
- treatment of gastric ulcer 357
- of gonococcus infection in women... 232
- vs. surgical treatment of gastric ulcer... 354
- Medicinal treatment of Graves's disease.... 428
- of pulmonary tuberculosis.... 320
- Medicine, alcohol in relation to..... 274
- Melanotic tumors of the skin, operation on... 751
- Meningitis, collargol in 75
- epidemic cerebrospinal—serum treatment of 330, 572
- treated with antimenigitis serum.... 803
- Mercury and acute syphilitic nephritis..... 787
- and tuberculosis 786
- Mesenteric rupture from abdominal contusion 900
- veins, thrombosis of the caused by operation 448
- Metal supports in the correction of certain forms of saddle-nose 205
- Metastasis in carcinoma of the breast, late recurrence of 181
- Metatarsophalangeal joint, luxation of the... 710
- Metric system, difficulties and dangers attending the use of the in prescribing..... 542
- Middle-ear diseases, suppurating—indications for surgical interference in..... 525
- infection, value of the leucocyte examination in suppurative conditions arising from 585
- Milk-free fluid diet and rectal irrigations in typhoid fever 732
- Milk, certain vital properties of..... 101
- in the treatment of Graves's disease.... 427
- supply of England, legislation for the regulation of 227
- of London 455
- the vital properties of and the protective processes in the body which are aided by it 549
- Mineral waters, a review of recent knowledge concerning the therapeutic action of 770
- of America in the light of recent analyses 566
- Mixed toxins of erysipelas and bacillus prodigiosus in the treatment of sarcoma.... 520
- Mobile kidney, unduly—making of a shelf below the 284
- Mobility of the kidneys, the treatment of... 271
- Modern means of diagnosis in surgical diseases of the kidneys 84
- medicine, some of the advances of..... 29
- treatment of tuberculosis by drugs..... 433
- Morphine and veratrum in the treatment of eclampsia 340
- craving, how are the individual phenomena of to be combated?..... 886
- Movable kidney 294
- spleen 291
- "Mr. Dooley" on psychotherapeutics..... 335
- Mucocomembranous colitis, the treatment of.. 122
- Mucous colitis 193
- the treatment of 794
- Mucus in the stools, associated with intestinal flux—treatment 425
- Nargol in the treatment of hay-fever..... 537
- Nasal passages, certain conditions of the—further observations on the value of lactic acid as a remedy for..... 577
- Nasopharyngeal tumors, transverse suprahyoid pharyngotomy preliminary to removal of 594
- Nature and treatment of leukemia..... 721
- Navicular bone, dislocation fracture of the... 506
- Neglected remedies, an address on..... 531
- Nephritis, acute syphilitic—mercury in the treatment of 787
- tuberculous 334
- Nephroureterectomy for tuberculosis..... 397
- Nerve disassociation 366
- suture for brachial palsy 35
- Neuralgia, the injection therapy of..... 635
- trifacial—the treatment of by means of deep injections of alcohol..... 201
- Neuralgic pain, the subcutaneous injection of air as a means of relieving..... 198

- Neurasthenia in its relation to pelvic symptoms in women, a consideration of.... 487
 the treatment of 343
 Neuritis, chronic, of the ulnar nerve..... 755
 Neuroses, gastric—the treatment of the.... 340
 various—Bier's method in the treatment of 322
 New and more rational method of treatment of leukemia by the x-ray..... 639
 meritorious external antiseptic preparation 415
 method of dealing with cleft palate..... 287
 of testing the functions of the digestive apparatus 18
 variety of internal hernia 55
 Nihilism and drugs 350
 Nitrate of silver in the treatment of ophthalmia neonatorum 504
 Nitrite of amyl in the treatment of hemoptysis 32
 poisoning after internal administration of bismuth subnitrate 275
 Noble, Charles F.: Modern Means of Diagnosis in Surgical Diseases of the Kidneys.. 84
 Normal saline solution in the treatment of blackwater fever 191
 Nourishing action of hyperemia 169
 Novocaine in spinal anesthesia..... 352
 the value of as a local anesthetic for subcutaneous use 430
- Obstetrics, analgesia versus anesthesia in... 711
 scopolamine-morphine anesthesia in..... 210
 Ocular affections, internal—diaphoresis in the treatment of 798
 conditions, the immediate treatment demanded in certain of the more serious... 808
 Oil of turpentine, internal use of the..... 653
 Ointments in the treatment of skin diseases. 345
 the absorption of..... 657
 Oriental torsion, intra-abdominal, without hernia 439
 Open-air treatment of tuberculosis, certain adjuncts to the 796
 Open treatment of recent fracture..... 105
 Operations under local analgesia..... 502
 Operative injuries of the thoracic duct in the neck 287
 treatment of ascites due to hepatic cirrhosis 361
 of cancer of the colon 812
 of exophthalmic goitre 676
 of gonorrhea in the female..... 596
 of perforating gastric ulcer..... 677
 of recent fractures of the femoral shaft 890
 of subdeltoid bursitis 211
 Ophthalmia neonatorum 255, 504
 the treatment of 209
 Ophthalmic reaction in the diagnosis of tuberculous conditions 788
 to tuberculin 276
 Calmette's 408
 surgery, the uses of adrenalin in..... 492
 Ophthalmic and the cutaneous diagnostic reactions in tuberculosis 724
 reaction in the diagnosis of tuberculosis of Calmette, some experiences of the 33
 to tuberculin, the status of the..... 613
 observations on the..... 279
 value of the in the diagnosis of tuberculosis 781
 tuberculin reaction 631
 a warning concerning the 411
 test, the 416
 Opium habit, a reputed cure for the..... 183
 in North China 401
 in the treatment of pericarditis..... 267
 smoking habit, a cure for the..... 717
 treatment of carbuncles 578
 Opsonic index and stauung-hyperemia, the relationship between 167
 and the use of tuberculin 872
 as a guide to regulate the use of vaccines in the treatment of disease 186
 in the diagnosis of tuberculosis... 261
 in the injection treatment of erysipelas 364
 treatment of disease 787
 Optimism in therapeutics 348
 Os navicularis pedis, dislocation fractures of the and their results 506
 Osteitis of the tibia, tubercular—treatment of by iodine and creosote 76
 Osteomalacia and rickets, influence of the suprarenal glands on the bony skeleton in relation to 881
- Osteomalacia, a new treatment of by adrenalin. 152
 Otitic brain abscess 367
 sinus-thrombosis, bacteriological examination of the blood of the sinus in the differential diagnosis of 602
 Otitis in infancy and childhood 672
 media, chronic—radical operation for the cure of 895
 recurrent suppurative, and its relation to mastoid and intracranial complications ... 685
 Otogenous thrombosis, primary, of the jugular bulb 662
 Outdoor sleeping in the treatment of asthma and some other chest troubles..... 721
 Ovarian transplantation 894
 Ovaries and testicles, the internal secretions of the in relation to the secretions of certain ductless glands 130
 Oxaluria: its symptoms and treatment..... 553
 Oxygen in the treatment of acute pneumonia. 564
 pure—the influence of upon wounds and infections 760
 Oysters bred near the outflow of sewage of certain towns in France 74
- Painless removal of adenoids and tonsils.... 435
 Pain, persistent—costal cartilage resection because of 590
 Palliative treatment of malignant diseases by means of the Roentgen rays..... 471
 Palsy, brachial—nerve suture for..... 35
 Pancoast, Henry K.: The Treatment of Leukemia by Means of the Roentgen Rays.... 533
 Pancreatic abscesses, circumscribed—drainage of 208
 Pancreatitis, chronic interstitial—operative treatment 55
 Paracentesis for middle-ear disease 525
 of the pericardium 116
 Paralysis, epidemic infantile—the treatment of 729
 infantile—the treatment of 370
 ischemic 628
 —Volkmann's 891
 strychnine—the cause of 498
 Parathyroid transplantation and its practical significance in surgery 596
 Parathyropriva, tetany, and its treatment... 333
 Paris letter 74, 150, 303
 Passive hyperemia in the treatment of gonorrheal arthritis of the large joints..... 759
 Pastes in the treatment of skin diseases... 345
 Pathology in its practical bearings upon the treatment of certain diseases of the skin... 390
 Patterson, Francis Denison: Uncinariasis in Porto Rico and its Treatment..... 243
 Pelvic abscess, the treatment of 246
 compression in operation for exstrophy of the bladder 759
 symptoms in women, neurasthenia in its relation to—a consideration of 487
 Penis, epithelioma of the: an analysis of 100 cases 447
 Perchloride of mercury in the treatment of burns and scalds 121
 Perez-Miro, Abraham: Report of Six Cases of Gonococcal Arthritis Treated with Antigococcal Serum 250
 Perforating gastric ulcer, the operative treatment of 677
 Perforation after gastric ulcer, ten cases of.. 824
 in typhoid fever 474
 Perforative peritonitis 554
 Pericarditis, aspiration in 116
 the diagnosis and treatment of..... 267
 Perils of anesthesia in American hospitals... 89
 Perineorrhaphy for complete lacerations..... 892
 Peritonitis, acute general—the continuous administration of fluids by the rectum in the treatment of 51
 diffuse, in women 784
 —permanent rectal infusion in 278
 perforative 554
 primary pneumococcal 812
 the treatment of 601
 Permanent increase of blood-pressure from adrenalin and its mechanism..... 499
 Pernicious anemia and allied conditions... 189
 Peroxide of hydrogen in the diseases of the ear, nose, and throat 423
 Personal experience of spinal anesthesia... 559
 experiences in the surgery of simple types of goitre 846
 Pertussis: a new method of treatment, with report of cases 650
 the treatment of by means of the abdominal binder 760

- Pertussis, twelve cases of treated with the abdominal binder 615
- Pessarles in retroversion of the uterus 839
- Pfahler, G. E.: The Treatment of Sarcoma by Means of the Roentgen Rays 464
- Pharmacological study of *Cannabis Americana* (*Cannabis sativa*) 26
- Pharyngeal reflex, the variation of the at different ages 152
- Pharyngotomy, transverse suprahyoid, preliminary to removal of nasopharyngeal tumors 594
- Phlegmonous sigmoiditis 519
- Phosphaturia: its symptoms and its treatment 714
- Phthisis, graduated manual labor in the treatment of 149
- Picric acid in the treatment of burns 706
- and scalds 121
- Plague, the transmission of by fleas and the means to arrest its transmission 653
- Plastic linitis 674
- Pleural and lung operations, abdominal posture in 754
- effusion and its treatment 416
- reflex, sudden death from 716
- Pneumococcal peritonitis, primary 812
- Pneumonia, acute—the treatment of 564
- alcohol in the treatment of 578
- cardiac failure in 485
- in children 873
- the guaiacol treatment of 4
- the prophylactic treatment of 331
- the treatment of in private practice 484
- treatment of 153
- Poisoning by chloroform, delayed 558
- by lead 714
- cerebral manifestations of 32
- by nitrate after internal administration of bismuth subnitrate 275
- by potassium chlorate, a case of 269
- by rhus 379
- Pollomyelitis, treatment of the acute stage of 274
- Polypsis, intestinal, and the relation of this condition to carcinomatous degeneration 131
- Postanesthetic vomiting, another method of preventing 779
- Postoperative dilatation of the stomach 63
- hemorrhage from the stomach and intestine 809
- treatment of adenoid patients 647
- Postpartum hemorrhage, the treatment of 127
- Postural method of treating pulmonary tuberculosis 713
- Potassium chlorate poisoning, a case of 269
- Precipitin reaction in hydatid disease 413
- Pregnancy and the puerperium, pyelitis in 813
- indications for artificial abortion in the first three months of 644
- pyelitis in—the medical aspects of 878
- Preliminary report on calcium chloride in the treatment of hemoglobinuric fever 86
- Prescription for tapeworm 912
- Present position of spinal anesthesia 297
- of x-ray therapeutics 421
- Preservation of the ovaries entire or in part in supravaginal or panhysterectomy 678
- Pressure symptoms complicating fractures of the base of the skull, decompressive operations for the relief of 480
- Preventive therapeutics, diseased tonsils an important factor in 862
- Price, George E.: Diagnosis and Treatment of Cerebrospinal Syphilis 539
- Price, J. C.: The Use of the X-ray in the Treatment of Exophthalmic Goitre 854
- Primary carcinoma of the vermiform appendix 757
- dysmenorrhea 49
- tumors of the adrenal gland in children 753
- Proctitis, purulent and ulcerative—the treatment of 591
- Prognosis and treatment, the relation of vitality to 259
- of syphilis 822
- Prone-pressure method of artificial respiration for the apparently drowned 548
- Prophylactic injections of dead streptococci in scarlet fever 789
- treatment of pneumonia 331
- Prophylaxis of surgical infections by immunization 741
- of typhoid fever by the treatment of the typhoid patient 624
- of venereal diseases from the standpoint of the gynecologist 215
- Prostatectomy, suprapubic 414
- the cure of the after-results of 781
- Prostatic enlargement, treatment of 316
- Prostatic malignant disease, the diagnosis and treatment of 678
- surgery, résumé of some recent foreign literature on 514
- Prurigo of Hebra treated with broth made with fresh pig's liver 803
- Pruritus ani 740
- etiology and treatment of 112
- the treatment of 658
- Psoriasis, the value of an absolutely vegetarian diet in 428
- treated with chrysarobin 425
- Psychotherapeutic methods, an analysis of 305
- Psychotherapeutics, "Mr. Dooley" on 835
- Psychotherapy 609
- a word as to 623
- its scope and limitations 799
- Public health in Paris 304
- Puerperal sepsis, curettage in 584
- the iodine treatment of 565
- Puerperium complicated by appendicitis 219
- Pulmonary edema, acute 342
- tuberculosis, the home treatment of 634
- the medicinal treatment of 320
- the postural method of treating 713
- the use of tuberculin in the diagnosis of 859
- Purulent and ulcerative proctitis, the treatment of 591
- Pyelitis in pregnancy and the puerperium 813
- the medical aspects of 878
- Pyelonephritis, infectious—the treatment of 59
- Pyloric stenosis 524
- congenital, in the adult 896
- in infancy 891
- Quality and quantity of the food in the gastric neuroses 341
- Question of anesthesia in goitre cases 847
- Quinine in blackwater fever 734
- in cholera 726
- the hypodermic use of 43
- the relation of hemoglobinuria or malaria to 477
- Racemose arterial angioma, the treatment of 666
- Rachistovainization, the technique of 303
- Rachitis, the importance of the early recognition and treatment of 495
- Radical operation for diverticulum of the esophagus 659
- for the cure of chronic otitis media 895
- Radium, action of on vascular tissue 858
- in exophthalmic goitre 161
- therapy 158
- the specific action of as a unique force in therapeutics 197
- Rational therapeutics as opposed to therapeutic nihilism 322
- treatment of blepharitis 544
- Rectal infusion, permanent, in diffuse peritonitis 278
- irrigations and milk-free fluid diet in typhoid fever 732
- stricture, inflammatory—the treatment of 593
- Recurrence of gall-stones around a suture inserted at previous operation 811
- Recurrent suppurative otitis media, chronic, and its relation to mastoid and intracranial complications 685
- Red wine injections in infantile diarrhea 568
- Regeneration of bone from proliferation of osseous tissues 129
- Registration of nurses in England 227
- Relation of feeding to the use of anesthetics 475
- of hemoglobinuria or malaria to quinine 477
- Relationship of "typhoid carriers" to the preventive treatment of typhoid fever 864
- Relative heights of the column in the water and mercury sphygmomanometers, an accurate table of the 456
- Remedial measures other than drugs in cardiac disease 621
- Remedies old and new, the comparative values of 703
- Removal of entire rectum and neighboring parts in carcinoma, operation for 135
- Renal and vesical conditions, the treatment of by permanent drainage through the loin 141
- Reputed cure for the opium habit 183
- Resection of the intestine in gangrenous intussusception in children 750
- Resorptive action of hyperemia 168
- Respiratory diseases, the use of cocillana in 804
- Rest after an acute illness, the necessity of 178
- in the treatment of pneumonia 154

- Resuscitation of the apparently drowned.... 353
- Retroperitoneal growths and kidney tumors. 677
- Retroversion and its treatment: an analysis of 500 consecutive cases at the Free Hospital for Women 138
- of the uterus, the prevention of, by operation and other methods 837
- Review of recent knowledge concerning the therapeutic action of mineral waters.. 770
- of some recent work on gout..... 505
- Rheumatism, blennorrhagic—the treatment of gonorrheal-vesiculotomy in the cure of. 150
- in children, treatment of..... 715
- Iodolbin in the treatment of..... 229
- Rheumatoid arthritis 108, 730
- Rhus poisoning 260, 379
- Rickets and osteomalacia, influence of the suprarenal glands on the bony skeleton in relation to 881
- Rigid flatfoot treated by excision of the scaphoid 53
- Roberts, John B.: The Anesthesia Peril in American Hospitals 89
- Roentgen rays in the cure of epithelioma.... 373
- in the treatment of kidney tuberculosis 601
- of leukemia 533
- of malignant diseases 471
- of pruritus 659
- and 741
- of sarcoma 464
- Rôle of the various elements in the development and regeneration of bone 129
- Roundworms, surgical treatment for..... 667
- Royer, B. Franklin, and Burvill-Holmes, E.: Fifteen Cases of Anthrax Treated in the Philadelphia Municipal Hospital 6
- Royer, Franklin: Hypersusceptibility of Man to Horse Serum 383
- Ruptured and crippled, anesthetics for the.. 869
- Rupture of the uterus through the Cæsarian cicatrix 676
- with a report of three cases 840
- Saddle-nose, the correction of certain forms of 205
- Salicylates in the treatment of rheumatism in children 230
- Salicylic acid and its preparations, the actions and uses of, with special reference to rheumatism 503
- Saline infusions 634
- injections in the treatment of cholera... 805
- Saliva, chemistry of in relation to hay-fever. 115
- Salt solution, the use and abuse of..... 676
- Sarcoma and carcinoma of the appendix.... 816
- hemorrhagic—idiopathic multiple 587
- the treatment of by means of the Roentgen rays 464
- treatment of with the mixed toxins of erysipelas and bacillus prodigiosus... 520
- Scabies, the treatment of by balsam of Peru. 739
- Scalds and burns, treatment of..... 120
- Scarlet fever, prevention of heart complications of 113
- treated with prophylactic injections of dead streptococci 789
- Scar tissue, the treatment of disease and deformity due to 679
- Schafer's prone-pressure method of artificial respiration 548
- Schamberg, Jay Frank: The Abuse of Arsenic in the Treatment of Diseases of the Skin and the Deleterious Results that May Occur from its Injudicious Employment... 403
- Scoliosis, treatment of by creeping..... 450
- Scopolamine as an analgesic 582
- morphine and chloroform anesthesia.... 884
- anesthesia 98
- in gynecology 486
- in obstetrics 210
- Scurvy, infantile—the diagnosis and treatment of 81
- Seasickness, the treatment of 493, 658
- Selection of anesthetics in operations on the thyroid 418
- Sepsis, puerperal—curettage in 584
- Serotherapy, prevention of the fatal intoxication sometimes following 883
- Serum diagnosis of syphilis 103
- of Wassermann in syphilis..... 336
- disease as a clinical manifestation of anaphylaxis 722
- therapy in tetanus 216
- treatment of epidemic cerebrospinal meningitis 330, 572
- of exophthalmic goitre 325
- Serum treatment of dysentery 283
- Shober, John B.: Nephroureterectomy for Tuberculosis 397
- Radium Therapy 158
- Shock and depression of the vasomotor center, the relation between 102
- Sigmoid, angulation of the 679
- flexure, acquired diverticula of the..... 482
- Sigmoiditis, phlegmonous 519
- Silver nitrate in gastric diseases 346
- Simple lifting apparatus 443
- method of removing stones from the lower ureter 209
- Sinus-thrombosis, otitic—bacteriological examination of the blood of the sinus in the differential diagnosis of 602
- Skin diseases, bacterial injections in the treatment of 443
- the general treatment of..... 344
- treatment of the more common... 569
- Sleep and sleeplessness 426
- Sleeping sickness, a bureau of information on established in London 532
- the value of atoxyl in 337
- Smith, S. MacCuen: Chronic Recurrent Suppurative Otitis Media and its Relation to Mastoid and Intracranial Complications... 685
- Sodium nucleinate in the treatment of acute infections 774
- Some of the advances of modern medicine... 29
- relations of the thyroid gland..... 843
- researches that aid and support clinical experience 93
- Sour milks, a study of..... 348
- Spermatic cord, torsion of the..... 60
- Sphygmomanometric work, the subject of... 456
- Spinal anesthesia 352, 863
- a personal experience of..... 559
- its effects on the process of normal labor 711
- the present position of 297
- column, traumatism of the..... 509
- Spleen, movable 291
- Splenectomy in Banti's disease..... 612
- Spondylitis, cervical—the treatment of..... 900
- Status epilepticus and its treatment..... 420
- of the anesthetist 546
- of the ophthalmic-reaction to tuberculin.. 613
- Stauung-hyperemia and opsonic index, the relationship between 167
- Stenosis, congenital, of the pylorus in the adult 896
- of the pylorus 524
- pyloric, in infancy 891
- Sterility in women, the causes and treatment of 109
- Stomach and duodenum, late results after operations for benign diseases of the... 813
- dilatation, atonic 830
- postoperative 63
- Stones in the lower ureter—a simple method of removing 209
- Stovalne anesthesia, changes in the nervous system after 874
- in spinal anesthesia 352
- Strangulated hernia, the treatment of gangrene in 815
- String-cutting method for impermeable esophageal strictures, test of the..... 440
- Strychnine and arsenic, a fatal prescription of paralysis, the cause of 498
- Study of sour milks 348
- Styracol in the treatment of tuberculosis... 434
- Subcutaneous injections of air as a means of relieving certain painful manifestations. 198
- Subdeltoid bursitis, the operative treatment of 211
- Sudden death from pleural reflex..... 716
- Summary of a thousand cases of appendicitis 288
- Summer diarrhea in children, treatment of.. 646
- Sunlight, the therapeutic application of in surgery 810
- Sun rays and artificial heat, effects of..... 756
- Supports of the uterus and abdominal organs 664
- Suppurating middle-ear diseases, indications for surgical interference in 525
- Suppurative conditions arising from middle-ear infection, value of the leucocyte examination in 585
- disease of the uterine adnexa, abdominal radical operation in 444
- Suprapubic prostatectomy 414, 751
- Suprarenal gland, the action of the extract of, and the method and indications for its use 42
- glands, influence of the on the bony skeleton in relation to osteomalacia and rickets 881
- Supravaginal or panhysterectomy, preservation of the ovaries entire or in part in.... 678

- Surgery of simple types of goitre, personal experiences in the 846
 of the heart and pericardium 441
 under diminished air-pressure.. 446
 of the kidneys 56
 of the prostate, résumé of some recent foreign literature on the 514
 Surgical affections, acute and chronic—hyperemia treatment of 172
 anesthesia and intraspinal injection..... 99
 forms of ileocecal tuberculosis 58
 infections, the prophylaxis of by immunization 741
 interference in suppurating middle-ear diseases, indications for 525
 phases of enteroptosis 675
 treatment of cancer of the sigmoid flexure and rectum 746
 of malignant goitre 855
 tuberculosis, cutaneous diagnosis of..... 760
 value of iodine 490
 Sutton, Dr.: The Treatment of Acne Vulgaris 80
 Suture of blood-vessels and the implantation and transplantation of vessels and organs, an experimental study of the..... 207
 Sweating feet, treatment of by formol..... 670
 Symposium upon anesthesia 864
 Synovial fluid, artificial 889
 Syphilis, an ointment used as a preventive of cerebrospinal—diagnosis and treatment of iodolbin in the treatment of..... 163
 the mortality from in the Paris hospitals the prognosis of 152
 the serum diagnosis of 103
 the value of atoxyl in the treatment of.. 560
 Wassermann's serum diagnosis in..... 336
 Syphilitic neuritis, acute—mercury in the treatment of 787
 tumors of the breast, diagnosis of..... 287
- Tapeworm, a prescription for..... 912
 the treatment of 806
 Teeth extraction, local anesthesia in..... 39
 Telephonic searcher for use in the bladder.. 286
 Test of the string-cutting method for impermeable esophageal strictures 440
 to determine the adaptability of the donor's blood to the receiver's blood in transfusion 457
 Tetanus, experimental contribution to early amputation in 57
 serum-therapy in 216
 treated by intraspinal injections of magnesium sulphate 888
 Tetany parathyropriva and its treatment..... 333
 Therapeutic action of mineral waters, a review of recent knowledge concerning the 770
 application of sunlight in surgery 810
 nihilism and rational therapeutics..... 832
 note in regard to angina pectoris..... 410
 optimism 348
 results, especially from serum-therapy in tetanus 216
 value of apomorphine hydrochloride..... 115
 Therapeutics and diagnosis, hold fast to that which is good in 703
 of cardiovascular disease 568
 the specific action of radium as a unique force in 197
 Therapy of high arterial tension..... 257
 of radium 158
 Thoracic duct in the neck, operative injuries of the 287
 Thoracostomy in heart disease..... 627, 720
 Thornton, E. Quin: The Difficulties and Dangers Attending the Use of the Metric System in Prescribing 542
 Throat inflammations, acute—the local treatment of from the standpoint of pathology. 776
 Thrombosis and embolism, arteriotomy for.. 206
 in the portal area, changes in the stomach as a result of... 590
 of the mesenteric veins caused by operation 448
 primary otogenous, of the jugular bulb. 662
 Thymol in the treatment of uncinariasis... 244
 Thymus death 716
 gland treatment of cancer 128
 Thyroid gland, cancer of the..... 36
 some relations of the..... 843
 in the treatment of eczema of infants and young children 742
 selection of anesthetics in operations on the 418
 tumors, removal of 358
 Tobacco smoke, the toxicity of..... 780
- Tonsillar disease an important factor in preventive therapeutics 862
 hemorrhage—surgical treatment 372
 Tonsillitis, follicular—the local use of acetylsalicylic acid (aspirin) in the treatment of 761
 the local treatment of..... 776
 Tonsils and adenoids, painless removal of... 435
 Torrance, Gaston: A New Method of Closing the Abdominal Wound after the "Grid-iron" Operation without Using Buried Sutures, by Means of Two Crossed Sutures of Silkworm-gut 767
 Torsion of the omentum, intra-abdominal, without hernia 439
 of the spermatic cord 60
 Total avulsion of the scalp 673
 Toxic effects of urotropin..... 19
 Toxicity of tobacco smoke 780
 Toxins of erysipelas and bacillus prodigiosus, mixed—treatment of sarcoma with the... 520
 Trachoma, the treatment of..... 23, 793, 808
 Transfusion and hypodermoclysis in the treatment of cholera and choleraic diarrhea. 552
 of blood, direct—the technique of..... 205
 in anemia 44
 test to determine the adaptability of the donor's blood to the receiver's blood in. 457
 Transplantation of organs by means of suture of vessels 445
 of ovaries 894
 of the parathyroids and its practical significance in surgery 596
 Traumatic arteriovenous aneurism of the cerebral portion of the carotid artery with pulsating exophthalmos 660
 heterotopy of the spinal cord..... 509
 laceration of the cartilages of the knee-joint 751
 rupture of the intestines..... 130
 separation of the lower epiphysis of the femur 293
 Treatment and diagnosis 100
 Trifacial neuralgia, the treatment of by means of deep injections of alcohol..... 201
 Trilonal in the treatment of chorea..... 630
 Tropical abscess of the liver, the prevention of by the treatment of the presupplicative stage of amebic hepatitis 801
 Trypsin treatment of cancer discredited.... 73
 Tubal pregnancy, deferred operations for intra-abdominal hemorrhage due to..... 823
 Tubercular disease, the diagnosis of..... 261
 osteitis of the tibia—treatment by iodine and creosote 76
 sinuses, the Bier suction treatment of... 53
 Tuberculin, Calmette's ophthalmic reaction to injections in the treatment of chronic joint disease by Wright's method.... 373
 in the treatment of tuberculosis..... 208
 inunction 738
 observations on the ophthlmo-reaction to ophthalmic reaction 276
 in children 304
 ophthlmo-reaction as a means of diagnosis in tuberculosis 33
 reaction, cutaneous 649
 reactions, the limitations of the newer.. 636
 the cutaneous reaction to in children..... 726
 the status of the ophthlmo-reaction to. 613
 the use of, and the opsonic index..... 872
 the use of in the diagnosis of pulmonary tuberculosis 859
 the varieties of 642
 vaccination, cutaneous, in the diagnosis of tuberculosis 500
 Tuberculosis, adenoid 219
 certain adjuncts to the open-air treatment of 796
 cutaneous tuberculin vaccination in the diagnosis of 500
 early—home treatment of 46
 hyperplastic, of the cecum..... 436
 ileocecal—surgical forms of 58
 kidney—the treatment of by means of the Roentgen rays 601
 nephroureterectomy for 397
 of the cecum 369
 of the hip-joint, treatment of..... 669
 of the urethra 899
 pulmonary—the home treatment of..... 634
 —the medicinal treatment of..... 320
 —the postural method of treating... 713
 —the use of tuberculin in the diagnosis of 859
 sanatorium for children established near London, England 226
 surgical—the cutaneous diagnosis of..... 760
 the inunction method in 788
 the modern treatment of by drugs..... 433

- Tuberculosis, the ophthalmo- and the cutaneous diagnostic reactions in 724
the ophthalmo-reaction in the diagnosis of
treated with mercury 786
value of the ophthalmo-reaction in the
diagnosis of 731
Tuberculo-opsionic index and treatment by
tuberculin 208
Tuberculous arthritis of the knee, a case of
apparently much aggravated by Bier's
congestion 170
conditions, the ophthalmic reaction in the
diagnosis of 788
nephritis 334
Tuberosity of the tibia, fracture of the 140
Tucker, Henry: The Local Use of Magne-
sium Sulphate Solution in the Treatment of
Erysipelas, with Report of Cases 381
Tumors, malignant, of the interior of the
nose 510
of the adrenal gland, primary, in chil-
dren 758
of the bone, conservative operations on 672
of the breast, syphilitic—diagnosis of... 287
of the female breast 262
of the kidney and retroperitoneal growths
of the nasopharynx, transverse suprahy-
oid pharyngotomy preliminary to re-
moval of 594
of the skin, melanotic—operation on... 751
thyroid—removal of 358
Turpentine oil, the internal use of 653
Typhoid fever, acetozone in 49
decreasing in Paris 75
feeding in 777
milk-free fluid diet and rectal ir-
rigations in 732
perforation in 474
serum, the use of in the Paris
hospitals 75
the prophylaxis of by the treat-
ment of the typhoid patient... 624
the relationship of "typhoid car-
riers" to the preventive treat-
ment of 864
gelatin and salt-water injections for in-
testinal hemorrhage in 811
treatment of the heart in 485
- Ulcerative and purulent proctitis, the treat-
ment of 591
Ulcer, gastric—medical vs. surgical treatment
of 354
—ten cases of perforation after... 824
—the medical treatment of... 357
—the treatment of 718
of the duodenum, diagnosis and treat-
ment of 866
of the duodenum, acute perforating—ob-
servations on six cases of... 449
of the stomach, treatment of... 586
Ulcers, iodine in treatment of... 649
venereal—the treatment of with hot irri-
gations 811
Ulnar nerve, chronic neuritis of the 765
injuries of the—treatment 54
Uncinariasis in Porto Rico and its Treatment
Undescended or maldescended testis associ-
ated with inguinal hernia, treatment of the
Unduly mobile kidney, making of a shelf be-
low the 284
Untoward effects following the use of Ma-
ragliano's serum 768
Unusual phenomena in chorea of aggravated
type 571
Urachus, fistula of the 57
Uremia, treatment of 109
Urethral tuberculosis 899
Urinary infection in children 440
Urotropin, the excretion of in the bile and
pancreatic juice 645
the toxic effects of 19
Use and abuse of digitalis 719
of salt solution 676
and misuse of iron remedies, remarks on
the 882
for the goat 652
Uterine adnexa, abdominal radical operation
in suppurative disease of the 444
carcinoma, inoperable—the value of ace-
tone in the treatment of 460
treated with acetone 660
retroversion after childbirth, the preven-
tion of, by operation and other methods
rupture—a report of three cases 840
through the Cæsarian cicatrix 676
Uterus and abdominal organs, supports of the
- Vaccine method of Wright in the treatment
of acute and chronic infections..... 451
treatment of disease 787
Vaccines in the treatment of disease, the op-
sonic index as a guide
to regulate the use of
of gonorrheal arthritis... 186
217
Valerianic acid group, studies of the hypnotic
action of the 498
Valvular disease of the heart 38
Van Kaathoven, J. J. A.: A Case of Tuber-
culous Arthritis of the Knee, Apparently
much Aggravated by Bier's Congestion... 170
Vasectomies of tuberculin 642
Vascular tissue, action of radium on 858
Vasectomy for the relief of enlarged prostate
Vasodilatation, the indications for and the
choice of a vasodilator 580
Vasomotor center, the relation between shock
and depression of the 102
Veasey, C. A.: The Treatment of Trachoma. 23
Vegetarian diet in psoriasis, the value of an
absolutely 428
Venereal diseases, prophylaxis of, from the
standpoint of the gynecolo-
gist 215
the conquest of the 626
ulcers, the treatment of with hot irri-
gations 811
Venous stasis, Bier's, in acute gout 296
Ventrosuspension of the uterus, Cæsarian
section following 588
Veratrum and morphine in the treatment of
eclampsia 840
Vermiform appendix, primary carcinoma of
the 757
Vesical and renal conditions, the treatment
of by permanent drainage through the loin
Vesiculotomy in the cure of gonorrheal rheu-
matism 715
Vessel suture as a means of transplantation
of organs 445
Vitality, the relation of to prognosis and
treatment 259
Vital properties of milk 101
and the protective pro-
cesses in the body
which are aided by it. 549
Volkman's Ischemic paralysis 891
Vomiting, postanesthetic—another method of
preventing 779
Von Noorden's treatment for mucous colitis. 794
- Wainwright, Jonathan M.: Personal Experi-
ences in the Surgery of Simple Types of
Goutre 846
Warning concerning the ophthalmo-tuberculin
reaction 411
Wassermann's serum diagnosis in syphilis... 336
Weiss, R.: A Review of Recent Knowledge
Concerning the Therapeutic Action of Min-
eral Waters 770
What we owe to the manufacturing pharma-
cist and the commercial scientific labora-
tory 228
Whole thickness of the skin used in grafting
Whooping-cough, a new method of treatment
in 650
Wine at meals, the advocacy of by French
physicians 151
Wiring operation in the treatment of aneur-
ism of the aorta 254
Wounds and infections, the influence of pure
oxygen upon 760
Wright's method in the treatment of chronic
joint disease by tuberculin injections... 378
vaccine method in the treatment of acute
and chronic infections 451
Wrist bone, semilunar—luxation of the... 446
Writer's cramp, cure of by Bier's method... 291
treatment of 491
- X-ray in the diagnosis of diseases of the
kidney 85
in the treatment of exophthalmic goitre. 854
of leukemia 633, 639
therapeutics, the present position of... 421
treatment of exophthalmic goitre... 791
X-rays in the treatment of chilblains..... 197
- Young children and infants, the treatment of
eczema in 643
cephalohydrocele in injuries of the
head in 412

BOOK REVIEWS.

Abel's Laboratory Handbook of Bacteriology	374	Index of Treatment by Various Writers.....	376
Adami, J. George: The Principles of Pathology	901	International Clinics. Edited by W. T. Longcope	220, 605
Atkinson, Stanley B.: The Law in General Practice	833	International Medical Annual for 1908	376
Austin, A. E.: A Manual of Clinical Chemistry	221	Jordan, Edwin O.: A Text-book of General Bacteriology	902
Bacteriology of Diphtheria. Edited by G. H. F. Nuttall and G. S. Graham-Smith	680	Keogh, Alfred; Melville, C. H.; Leishman, Lieut.-Colonel; and Pollock, C. E.: A Manual of Venereal Diseases	224
Ballenger, Edgar G.: Genito-urinary Diseases and Syphilis	909	Kerr, Le Grand: The Baby: Its Care and Development	832
Ballenger, William Lincoln: Diseases of the Nose, Throat, and Ear	452	Kolle, F. Strange: Subcutaneous Hydrocarbon Protheses	682
Bandler, Samuel Wyllis: Medical Gynecology	681, 909	Kyle, D. Braden: A Text-book of Diseases of the Nose and Throat	143
Bardswell, N. D., and Chapman, John E.: Diets in Tuberculosis	376	Leedham-Green, Charles: The Treatment of Gonorrhea in the Male	681
Barrus, Clara: Nursing the Insane	452	Lockwood, C. B.: Clinical Lectures and Addresses on Surgery	453
Baruch, Simon: Principles and Practice of Hydrotherapy	528	Mallory, Frank Burr, and Wright, James Homer: Pathological Technique	903
Barwell, Harold: Diseases of the Larynx	222	Mann, Matthew D.: A Manual of Prescription Writing	145
Beck, Amanda K.: A Reference Handbook for Nurses	906	Mayon, M. Stephen: Diseases of the Eye	905
Benedict, A. L.: Golden Rules of Dietetics	828	McCann, Frederick John: Cancer of the Womb	148
Bickham, Warren S.: A Text-book of Operative Surgery	909	McCaw, John: Aids to the Diagnosis and Treatment of Diseases of Children	222
Bonney, Sherman G.: Pulmonary Tuberculosis and its Complications	829	McCombs, Robert S.: Diseases of Children for Nurses	221
Brooke, Gilbert E.: Aids to Tropical Medicine	832	McIsaac, Isabel: Hygiene for Nurses	832
Cooke, Joseph Brown: A Manual of Obstetrical Technique	905	Meyer, Willy, and Schmieden, Victor: Bier's Hyperemic Treatment in Surgery, Medicine, and the Specialties	874
Corner, Edred M.: Diseases of the Male Generative Organs	224	Miller, Charles C.: The Cure of Rupture by Paraffin Injections	833
Corner, Edred M., and Pinches, H. Irving: Operations of General Practice	147	Modern Medicine. Edited by William Osler	526, 603
Dana, Charles M.: A Text-book of Nervous Diseases and Psychiatry	831	Nervous and Mental Diseases. Edited by Hugh T. Patrick and Charles L. Mix	302
Davis, Charles H. Stanley: Consumption: Its Prevention and Cure Without Medicine	833	Neusser, Edmund von: A Clinical Treatise on the Symptomatology and Diagnosis of the Disorders of Respiration and Circulation	66
Dawbarn, Robert H. M.: An Aid to Materia Medica	375	Ortner, Norbert: The Treatment of Internal Diseases	375
De Schweinitz, George E., and Holloway, Thomas B.: Pulsating Exophthalmos	826	Osler, William: An Alabama Student and Other Biographical Essays	831
Dingwall-Fordyce, A.: Diet in Infancy	907	Park, William Hallock: Pathogenic Microorganisms, Including Bacteria and Protozoa	903
Diseases of Children. Edited by M. Pfaundler and A. Schlossmann	451	Penrose, Charles B.: A Text-book of the Diseases of Women	904
Diseases of the Heart. Edited by George Dock	220	Physician's Visiting List for 1909	906
Diseases of the Nervous System. Edited by Archibald Church	66	Pottenger, Francis M.: The Diagnosis and Treatment of Pulmonary Tuberculosis	301
Dorland, W. A. Newman: The Age of Mental Virility	828	Potts, Charles S.: Nervous and Mental Diseases	452
Edmunds, Arthur: Glandular Enlargement and Other Diseases of the Lymphatic System	834	Poynton, F. H.: Heart Disease and Thoracic Aneurism	222
Emerson, Joseph Phillips: Clinical Diagnosis	906	Powell, Lyman P.: Christian Science: The Faith and its Founder	374
Forester, H.: The Aix-les-Bains Thermotreatment	681	Practitioner's Visiting List for 1909	906
Fowler, Russell S.: The Operating Room and the Patient	70	Progressive Medicine. Edited by H. A. Hare	65, 301, 528, 831
Francis, Francis: A Chemical Basis of Pharmacology	302	Ramsey, Murray Elliott: Practical Life Insurance Examinations	453
Fuchs, Ernst: Text-book of Ophthalmology	300	Rhodes, Frederick A.: Applied Physiology	222
Gilliam, D. Tod: A Text-book of Practical Gynecology for Practitioners and Students	70	Robson, A. W. Mayo, and Cammidge, P. J.: The Pancreas: Its Surgery and Pathology	67
Goepp, R. Max: State Board Examinations and Answers	530	Rührh, John: A Manual of Diseases of Infants and Children	376
Gould, George M.: Right-handedness and Left-handedness	530	Sargent, Percy: Surgical Emergencies	225
Gray, Henry: Anatomy, Descriptive and Surgical	830	Sawyer, James E. H.: Physical Signs of Diseases of the Thorax and Abdomen	606
Green's Encyclopedia and Dictionary of Medicine and Surgery	144, 530, 604, 833	Schamberg, Jay Frank: Diseases of the Skin and Eruptive Fevers	830
Haig, Alexander: Uric Acid as a Factor in the Causation of Disease	605	Schmidt, Rudolph: Pain: Its Causation and Diagnostic Significance in Internal Diseases	830
Harman, N. Bishop: Aids to Ophthalmology	832	Scott, James Foster: The Sexual Instinct	143
Harris, Wilfred: Electrical Treatment	529	Scudder, Charles Locke: The Treatment of Fractures	69
Herman, George Ernest: The Student's Handbook of Gynecology	683	Seufert, Edward C., and Stuart, John: A Vademecum of Treatment	832
Hoxie, George H.: The Practice of Medicine for Nurses	302	Sobotta, Johannes: Atlas and Text-book of Human Anatomy	143
Hughes, Lucas: Squint and Ocular Paralysis	64	Surgery: Its Principles and Practice. Edited by William Williams Keen	223
Human Anatomy. Edited by Prof. George A. Piersol	145	Sutherland, Major W. D.: Blood-stains: Their Detection, and the Determination of Their Source	64
Hutchison, Robert, and Rainey, Harry: Clinical Methods	606		
Index Catalogue of the Library of the Surgeon-General's Office of the United States Army	907		

System of Medicine. Edited by Thomas Clifford Allbutt and Humphrey Davy Rolleston	142, 904
Thompson, Ralph L.: Glimpses of Medical Europe	453
Thomson, H. Campbell: Diseases of the Nervous System	529
Thomson, John: A Guide to the Clinical Examination and Treatment of Sick Children	905
Todd, James Campbell: A Manual of Clinical Diagnosis	828
Train, Arthur: Mortmain	221
Treves, Sir Frederick: Surgical Applied Anatomy	71
Turner, Philip: Aids to Osteology	632
Tuttle, George M.: Diseases of Children....	144
Tyrode, Maurice V.: Pharmacology.....	529
Underwood, Arthur S., and Gabell, Douglass: Aids to Dental Surgery	221
Upson, Henry S.: Insomnia and Nerve Strain	606
Waggett, Ernest B.: Diseases of the Nose....	221
Walker, J. W. Thomson: Estimation of the Renal Function in Urinary Surgery.....	908
Walton, George Lincoln: Why Worry?.....	530
Wheeler, Alexander, and Jack, William R.: A Handbook of Medicine and Therapeutics.	606
Willcox, Reynold Webb: Manual of Fever Nursing	453
Williamson, R. T.: Diseases of Spinal Cord.	827
Williams, W. Roger: The Natural History of Cancer	907
Wilson, W. Reynolds: A Reference Handbook of Obstetric Nursing	144
Wood, H. C.: Therapeutics: Its Principles and Practice	829

